Air Quality Monitoring

St. Albert Urban Survey

2004 - 2005 Seasonal Monitoring — Final Report

INTRODUCTION

Alberta Environment conducts mobile air quality surveys each year as part of its air quality monitoring program. These monitoring surveys are unannounced and use the Department's *Mobile Air Monitoring Laboratory* (MAML). The MAML provides a "snapshot" in time and space of the air quality at the locations monitored. Pollutants measured by the MAML included ammonia, carbon monoxide, hydrocarbons, oxides of nitrogen, ozone, particulate matter, reduced sulphur compounds and sulphur dioxide.

In 2004 and 2005, Alberta Environment conducted a series of ambient air quality monitoring surveys in St. Albert. Six monitoring locations were selected; each site was representative of a different urban land use in St. Albert.

Starting in April 2004 and ending in March 2005, Alberta Environment conducted four seasons of monitoring with the MAML. The MAML monitored air quality for 160 hours in St. Albert. The objectives of monitoring this area were to:

(1) Support the Clean Air Strategic Alliance's Strategic Plan for Ambient Monitoring in Alberta for centers with a population greater than 20,000.
(2) Address odour complaints.
(3) Provide data to support air quality monitoring and modeling activities.
(4) Compare St. Albert's air quality to Alberta's Ambient Air Quality Objectives.
(5) Compare pollutant concentrations in St. Albert to other urban centres in the province.

Alberta
ENVIRONMENT

Each location was monitored for a minimum of one hour to allow comparison with applicable one-hour Alberta Ambient Air Quality Objectives (AAAQO). Results from other mobile surveys and 2004 data from permanent monitoring stations in Alberta are also presented in this report for comparison purposes.

Ambient concentrations of all air pollutants measured by the MAML in St. Albert were below applicable AAAQOs. Alberta Environment measured similar or lower concentrations of pollutants in the St. Albert surveys when compared to other mobile urban monitoring projects or surveys where the primary source of criteria air pollutants is vehicular traffic.

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OVERVIEW

(1) The concentrations of air pollutants measured in the St. Albert Urban Survey were below Alberta Ambient Air Quality Objectives (AAAQO). Alberta has one-hour AAAQOs for ammonia, carbon monoxide, nitrogen dioxide, ozone, hydrogen sulphide and sulphur dioxide. A summary of the findings from the survey and the Ambient Air Quality Objectives can be found in Table 1.

Table 1: Summary of MAML Monitoring results for the St. Albert Urban Survey.

Pollutant	Units	AAAQO	Minimum	Median	Maximum	Number of Exceedances
Ammonia (NH_3)	ppm	2	bd	0.002	0.012	0
Carbon Monoxide (CO)	ppm	13	bd	0.3	1.5	0
Hydrocarbons – Methane (CH_4)	ppm	n/a	1.8	2.6	5.1	--
Hydrocarbons – Reactive Hydrocarbons (RHC)	ppm	n/a	bd	0.1	0.6	--
Hydrocarbons – Total Hydrocarbons (THC)	ppm	n/a	2.0	2.7	5.3	--
Hydrocarbons – Polycyclic Aromatic Hydrocarbons (PAH)	ng/m^3	n/a	bd	5	63	--
Nitrogen dioxide (NO_2)	ppm	0.212	bd	0.012	0.041	0
Nitric Oxide (NO)	ppm	n/a	bd	0.007	0.103	--
Oxides of nitrogen (NO_x)	ppm	n/a	bd	0.021	0.144	--
Ozone (O_3)	ppm	0.082	bd	0.024	0.050	0
Particulates – Total Suspended Particulates (TSP)	$\mu g/m^3$	n/a	2	33	265	--
Particulates – Particulate Matter <10µm (PM_{10})	$\mu g/m^3$	n/a	1	23	168	--
Particulates – Particulate Matter <2.5µm ($PM_{2.5}$)	$\mu g/m^3$	n/a	bd	4	21	--
Sulphur Compounds – Hydrogen Sulphide (H_2S)	ppm	0.010	bd	bd	0.004	0
Sulphur Compounds – Total Reduced Sulphur (TRS)	ppm	n/a	bd	0.001	0.004	--
Sulphur Dioxide (SO_2)	ppm	0.172	bd	0.001	0.011	0

$\mu g/m^3$ – micrograms per cubic metre of air ppm – parts per million ng/m^3 – nanograms per cubic meter of air

AAAQO – one-hour Alberta Ambient Air Quality Objective n/a – no one-hour objective bd – below detection limit

(2) The one-hour maximum ozone concentration of 0.050 ppm was measured at the Riel Business Park on June 18, 2004; this concentration is below the one-hour AAAQO for ozone of 0.082 ppm.

(1) The concentrations of air pollutants measured in the St. Albert Urban Survey were below Alberta Ambient Air Quality Objectives (AAAQO). Alberta has one-hour AAAQOs for ammonia, carbon monoxide, nitrogen dioxide, ozone, hydrogen sulphide and sulphur dioxide. A summary of the findings from the survey and the Ambient Air Quality Objectives can be found in Table 1.

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Particulates – Particulate Matter <10µm **(PM_{10})**	µg/m^3	n/a	1	23	168	--
Particulates – Particulate Matter <2.5µm **($PM_{2.5}$)**	µg/m^3	n/a	bd	4	21	--
Sulphur Compounds - Hydrogen Sulphide **(H_2S)**	ppm	0.010	bd	bd	0.004	0
Sulphur Compounds - Total Reduced Sulphur **(TRS)**	ppm	n/a	bd	0.001	0.004	--
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µg/m^3 – micrograms per cubic metre of air ppm – parts per million ng/m^3 – nanograms per cubic meter of air

AAAQO – one-hour Alberta Ambient Air Quality Objective n/a – no one-hour objective bd – below detection limit

(2) The one-hour maximum ozone concentration of 0.050 ppm was measured at the Riel Business Park on June 18, 2004; this concentration is below the one-hour AAAQO for ozone of 0.082 ppm.

Ozone concentrations are generally lower at urban locations than at rural locations. This is due to the destruction of ozone by nitric oxide that is emitted by vehicles. This chemical process was evident in the St. Albert survey. When elevated nitric oxide concentrations were measured by the MAML, ozone concentrations were very low or below the detection limit of the ozone analyzer.

(3) Overall, hydrogen sulphide and reduced sulphur compounds concentrations were very low.

The maximum one-hour hydrogen sulphide concentration of 0.004 ppm was measured on November 10, 2004 at the Campbell Industrial Estates monitoring site. The maximum hydrogen sulphide concentration measured at this site is below the AAAQO of 0.010 ppm.

The MAML also measures total reduced sulphur compounds; hydrogen sulphide is a component of the total reduced sulphur compounds measurement. The maximum total reduced sulphur compounds concentration of 0.004 ppm was also measured on November 10, 2004 at the Campbell Industrial Estates monitoring site; this indicates that 100 percent of the total reduced sulphur compounds measured at this location was hydrogen sulphide.

Hydrogen sulphide and other reduced sulphur compounds are not typically associated with urban emission sources. Trace concentrations of sulphur compounds measured in St. Albert could perhaps be from distant upwind upstream oil and gas operations.

(4) Resuspended road dust and vehicle emissions may have contributed to elevated particulate matter concentrations in the St. Albert survey. The highest concentrations were measured in the morning between 06:00 and 09:00 and in the afternoon between 14:30 and 18:30. These time periods roughly correspond to the diurnal rush-hour traffic cycles on Highway 2 (St. Albert Trail) and other major roadways in St. Albert.

The maximum one-hour concentrations of total suspended particulates, inhalable particulate matter and respirable particulate matter were 265 $\mu g/m^3$, 168 $\mu g/m^3$ and 21 $\mu g/m^3$, respectively. These concentrations were all measured at busy intersections near the St. Albert Centre and Village Landing shopping malls on Highway 2. Total suspended particulate matter concentrations were highest in the spring months and lowest during winter months which is consistent with total suspended particulate from road dust.

The maximum inhalable particulate matter concentration measured in St. Albert was below Alberta Environment's *proposed* one-hour AAAQO of 80 $\mu g/m^3$.

(5) In Alberta's urban centres, episodes of high carbon monoxide concentrations are generally attributed to upwind forest fires or vehicle emissions during

stagnant weather conditions. Overall, carbon monoxide concentrations in St. Albert were similar to those measured in other urban MAML surveys.

The maximum one-hour carbon monoxide concentration of 1.5 ppm was measured on February 16, 2005 at the Riel Business Park monitoring site. This concentration is well below the one-hour AAAQO of 13 ppm for carbon monoxide and may have been influenced by emissions from upwind construction equipment activity (heavy diesel equipment).

(6) Overall, methane and reactive hydrocarbon concentrations measured in the St. Albert survey were consistent with what has been measured in other urban MAML surveys. Most hydrocarbon concentrations were only slightly above what is considered background for *rural* Alberta.

Methane concentrations ranged from 1.8 ppm to 5.1 ppm, while total hydrocarbon concentrations ranged from 2.0 ppm to 5.3 ppm. The maximum one-hour methane concentration was measured on February 16, 2005 at the Riel Business Park monitoring site, while the highest reactive hydrocarbon concentration of 0.6 ppm was measured on October 4, and Sepember 27, 2004 at the Red Willow Park and St. Albert Centre monitoring sites respectively.

Elevated methane concentrations at the Riel Business Park site are likely due to emissions from a former landfill site (now capped) near the bank of the Sturgeon River at the Riel Recreation Area. Methane is considered to be biologically inactive and is essentially non-toxic. There is no one-hour AAAQO for methane.

The marginally elevated reactive hydrocarbon concentrations in St. Albert were likely caused by vehicle exhaust emissions. Background reactive hydrocarbon concentrations in rural Alberta are approximately 0.2 ppm; the maximum one-hour reactive hydrocarbon concentrations measured in St. Alberta was 0.6 ppm.

(7) Overall, polycyclic aromatic hydrocarbon concentrations were low compared to other urban area MAML surveys.

The maximum one-hour polycyclic aromatic hydrocarbon concentration of 63 ng/m^3 was measured on November 25, 2004 at the Riel Business Park. Elevated polycyclic aromatic hydrocarbon concentrations generally coincided with elevated concentrations of oxides of nitrogen, both of which are products of fuel combustion from vehicles. Most of the elevated PAH concentrations were measured at busy intersections and the probable source was exhaust emissions from vehicles including 'rush hour' traffic, idling cars and diesel trucks.

(8) Nearly all combustion processes produce oxides of nitrogen (nitric oxide, nitrogen dioxide). Transportation (automobiles, trains, aircraft) is the major source in of these substances in Alberta's cities. The highest concentrations of oxides of nitrogen were measured near Village Landing Mall and St. Albert

Centre when there was considerable traffic volume on Highway 2; both sites are adjacent to Highway 2.

The maximum concentration of nitrogen dioxide measured was 0.041 ppm; this is approximately 19 percent of the AAAQO of 0.212. The maximum nitric oxide and nitrogen dioxide concentrations measured in St. Albert were 0.103 ppm and 0.041 ppm respectively; both were measured at the St. Albert Centre monitoring site.

(9) Elevated ammonia concentrations are commonly found near feedlots, confined feeding operations and fertilizer manufacturing plants. Without the influence of these types of industries, ammonia concentrations were very low at all monitoring locations in the St. Albert survey.

The maximum one-hour concentration measured in the St. Albert survey was 0.012 ppm; this is less than one percent of the one-hour AAAQO for ammonia of 2 ppm.

ALBERTA'S AMBIENT AIR QUALITY OBJECTIVES

Alberta's Ambient Air Quality Objectives[1] are established under Section 14 of the Environmental Protection and Enhancement Act (EPEA R.S.A. 2000, c.E-12, as amended). EPEA provides for the development of environmental objectives for Alberta.

The Ambient Air Quality Objectives are used for:

- **Reporting on the state of the atmospheric environment in Alberta.**
- **Reporting to Albertans on the quality of the air through Alberta's Air Quality Index (AQI).**
- **Establishing approval conditions for regulated industrial facilities.**
- **Evaluating proposals to construct facilities that will have air emissions.**
- **Guiding special ambient air quality surveys.**
- **Assessing compliance near major industrial air emission sources.**

Some of Alberta's Ambient Air Quality Objectives are based on odour perception. This is the case for ammonia, nitrogen dioxide and hydrogen sulphide. For these chemicals, people are likely to detect an odour at concentrations well below levels that may affect human health.

Alberta's Ambient Air Quality Objectives for one-hour concentrations of pollutants monitored by the MAML and the basis for the objective are listed in Table 2.

Table 2: Alberta's Ambient Air Quality Objectives for pollutants measured by the MAML.

Pollutant	One-hour AAAQO (ppm*)	Basis for Objective
Ammonia	2	odour perception
Carbon monoxide	13	oxygen carrying capacity of blood
Nitrogen dioxide	0.212	odour perception
Ozone	0.082	reduction of lung function and effects on vegetation
Hydrogen sulphide	0.01	odour perception
Sulphur dioxide	0.172	pulmonary function

* Parts per million by volume.

[1] *Alberta Ambient Air Quality Objectives.* Alberta Environment. April 2005.

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THE MOBILE AIR MONITORING LABORATORY

The MAML is a 27-foot (8.2 m) vehicle that has been specially designed and equipped to measure air quality. It houses a variety of instruments that continuously sample the air at specified time or distance intervals. The MAML is equipped with:

- **a dual computer system custom-programmed to accept and record the measurement of air samples from each analyser,**
- **a GPS (Global Positioning System) that identifies the MAML's location as it moves around Alberta,**
- **an exhaust purifying system that minimizes emissions from the vehicle and**
- **two on-board generators that are also equipped with exhaust scrubbers**

The pollutants measured by the MAML are listed in Table 3.

Figure 1: **Alberta Environment's Mobile Air Monitoring Laboratory**

Table 3: **Pollutants monitored by the MAML (including minimum detection limits and operating ranges).**

Pollutant	Operating Range	
	Lower Detection Limit*	Upper Detection Limit**
Ammonia **(NH_3)**	0.001 ppm	5 ppm
Carbon Monoxide **(CO)**	0.1 ppm	50 ppm
Hydrocarbons – Methane **(CH_4)**	0.1 ppm	10 ppm
Hydrocarbons – Reactive Hydrocarbons **(RHC)**	0.1 ppm	20 ppm
Hydrocarbons – Total Hydrocarbons **(THC)**	0.1 ppm	20 ppm
Hydrocarbons – Polycyclic Aromatic Hydrocarbons **(PAH)**	3 ng/m^3	1000 ng/m^3
Nitrogen dioxide **(NO_2)**	0.001 ppm	1 ppm
Nitric Oxide **(NO)**	0.001 ppm	1 ppm
Oxides of nitrogen **(NO_x)**	0.001 ppm	1 ppm
Ozone **(O_3)**	0.001 ppm	0.5 ppm
Particulates – Total Suspended Particulates **(TSP)**	1 $\mu g/m^3$	1.0 g/m^3
Particulates – Particulate Matter <10µm **(PM_{10})**	1 $\mu g/m^3$	1.0 g/m^3
Particulates – Particulate Matter <2.5µm **($PM_{2.5}$)**	1 $\mu g/m^3$	1.0 g/m^3
Sulphur Compounds - Hydrogen Sulphide **(H_2S)**	0.001 ppm	1 ppm
Sulphur Compounds - Total Reduced Sulphur **(TRS)**	0.001 ppm	1 ppm
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ppm - parts per million

ng/m^3 = nanograms per cubic metre

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* The ***lower detection limit*** indicates the *minimum* amount of pollutant and the lower limit of meteorological data can be measured by the instrument.

** The ***upper detection limit*** indicates the *maximum* amount of pollutant the instrument can detect and the upper limit for meteorological data measured. This limit is set to provide the optimum precision over that range. The upper limit can be raised, however, precision at the lower levels (where most levels are monitored) is then compromised.

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MONITORING DATES AND METHOD

Alberta Environment used the MAML to monitor air quality in the St. Albert area. Air quality was monitored on the following dates:

- **Spring (April 29, May 7, 11, 14, 2004)**
- **Summer (June 10, 18, 23, July 20, 2004)**
- **Fall (September 27 October 4, November 3, 10, 2004)**
- **Winter (February 16, 18, March 3, 4, 2005)**

The monitoring sites were selected based on representative urban land use, odour complaints, and proximity to busy intersections. The location of the facilities are described in Table 4, mapped on Figure 2 and depicted in Figures 3. Wind monitoring results are also presented on Figure 4.

Monitoring was conducted for a minimum of one hour at each location to allow comparison to Alberta's Ambient Air Quality Objectives. A total of 160 hours of air quality data were collected.

Table 4: Locations monitored by the MAML in St. Albert.

	Spring				Summer				Fall				Winter			
	2004				2004				2004				2005			
Monitoring Site	29-Apr	7-May	11-May	14-May	10-Jun	18-Jun	23-Jun	20-Jul	27-Sep	4-Oct	3-Nov	10-Nov	16-Feb	18-Feb	3-Mar	4-Mar
1. St. Albert Centre. Highway 2 and Bellerose Drive	x			x		x	x	x	x	x	x	x	x		x	x
2. Lacombe Park. Larose Drive and Larson Drive.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
3. Red Willow Park. Boudreau Road and Sturgeon Road	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
4. Campbell Business Park. Cural Drive and Carswell Street	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
5. Riel Business Park. Riel Drive and Rayborn Crescent	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
6. Village Landing Mall. Highway 2 and Gervais Road		x	x		x	x	x			x				x		

MONITORING SITE MAP

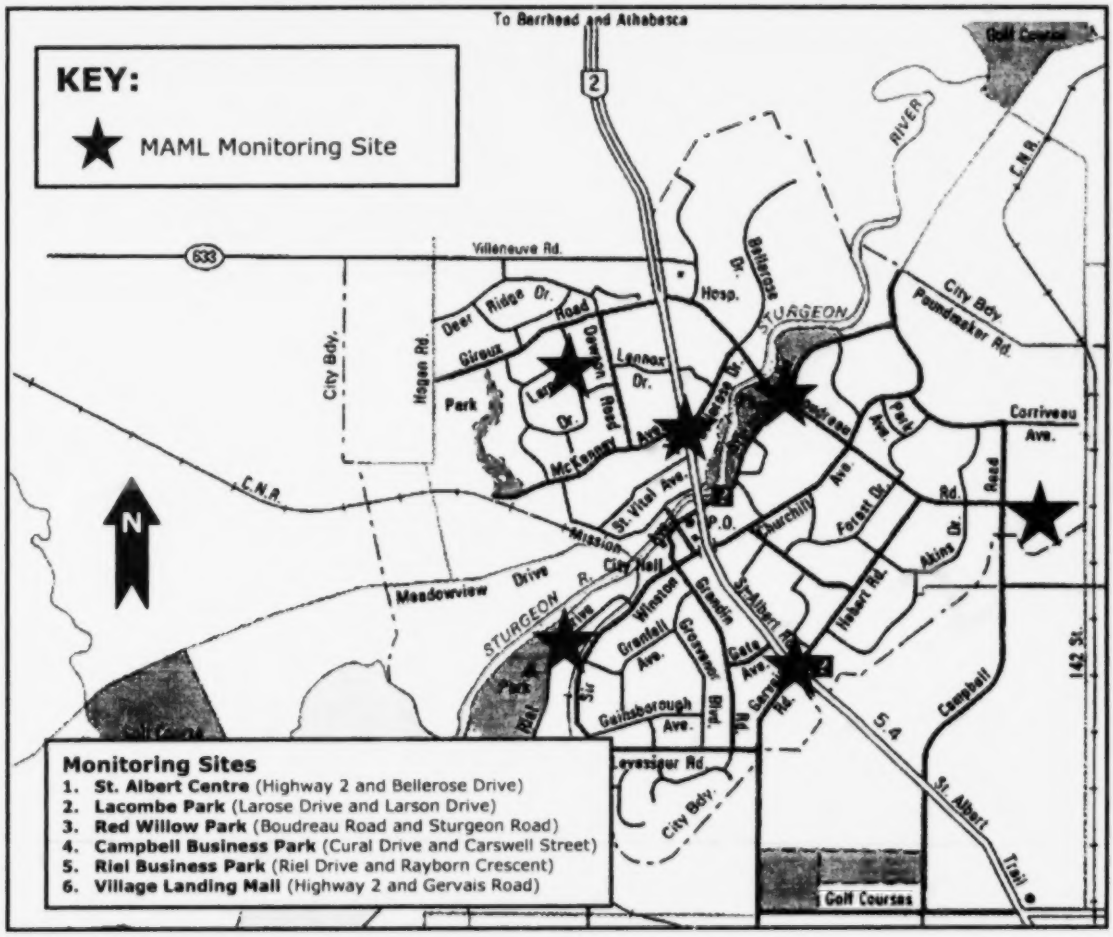
KEY:
MAML Monitoring Site
To Barrhead and Athabasca
Villeneuve Rd.
Hosp.
Golf Courses
Monitoring Sites
1. St. Albert Centre (Highway 2 and Bellerose Drive)
2. Lacombe Park (Larose Drive and Larson Drive)
3. Red Willow Park (Boudreau Road and Sturgeon Road)
4. Campbell Business Park (Cural Drive and Carswell Street)
5. Riel Business Park (Riel Drive and Rayborn Crescent)
6. Village Landing Mall (Highway 2 and Gervais Road)

Figure 2: **Locations monitored by the MAML in the St. Albert Survey.**

Map adapted from About Inc. (http://gocanada.about.com/)

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1. St. Albert Centre. Highway 2 and Bellerose Drive	x			x		x	x	x	x	x	x	x	x		x	x
2. Lacombe Park. Larose Drive and Larson Drive.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
3. Red Willow Park. Boudreau Road and Sturgeon Road	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
4. Campbell Business Park. Cural Drive and Carswell Street	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
5. Riel Business Park. Riel Drive and Rayborn Crescent	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
6. Village Landing Mall. Highway 2 and Gervais Road		x	x		x	x	x			x				x		

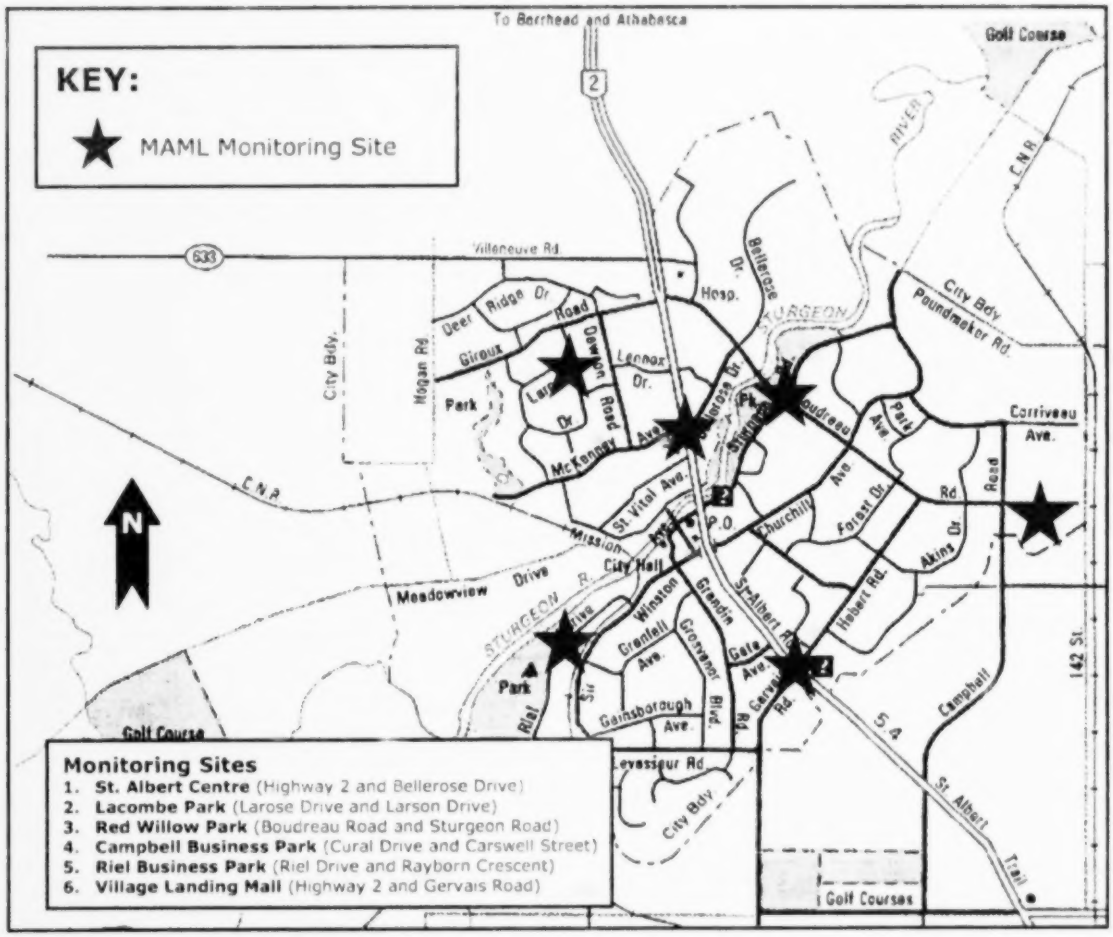

Figure 2: **Locations monitored by the MAML in the St. Albert Survey.**

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MONITORING SITE PHOTOGRAPHS

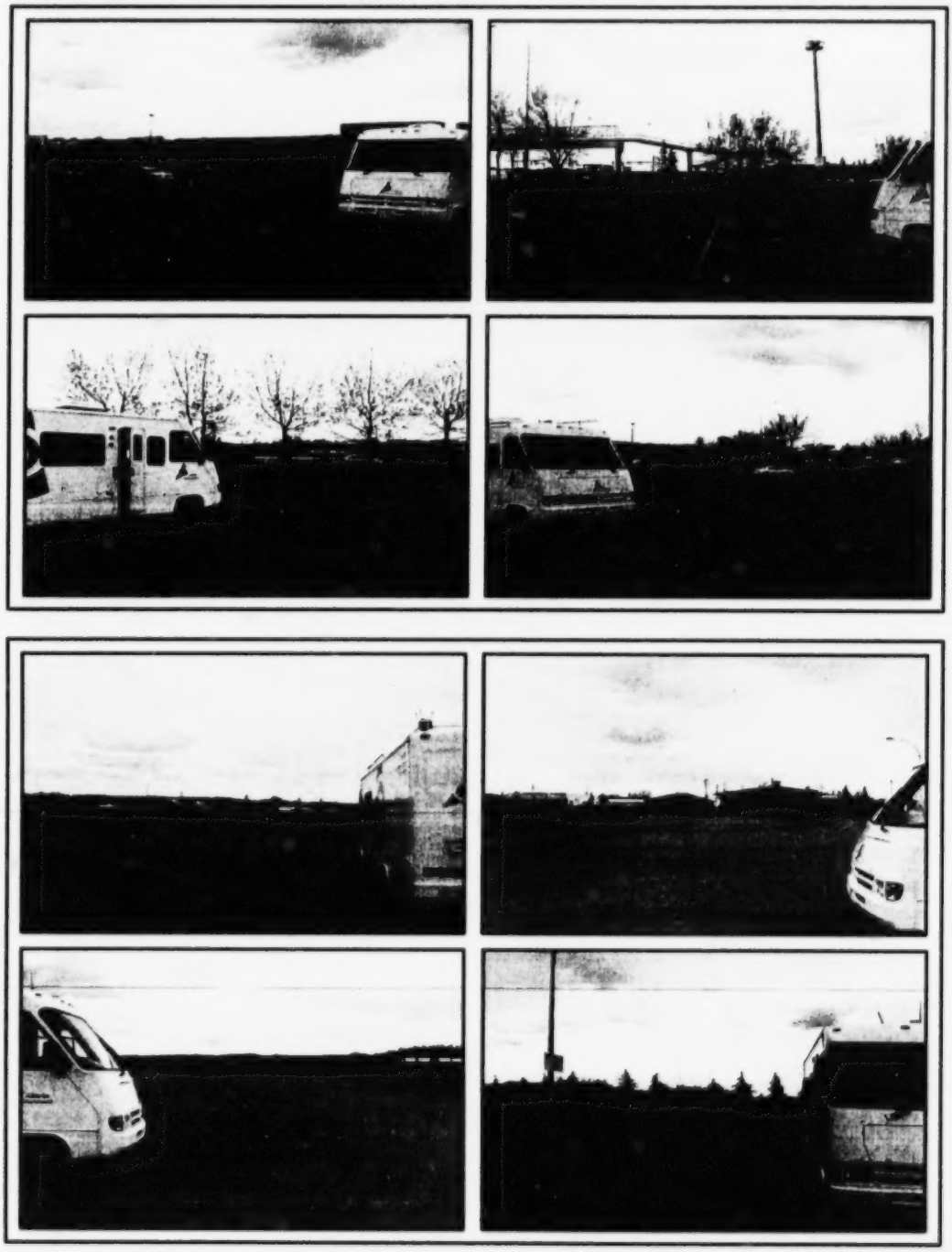


Figure 3: ***Upper four images*****- Clockwise from upper left: north, east, south and west views of monitoring location #5 in the Riel Business Park.** ***Lower four images*** **- Clockwise from upper left: north, east, south and west views of monitoring location #1 at St. Albert Centre.**

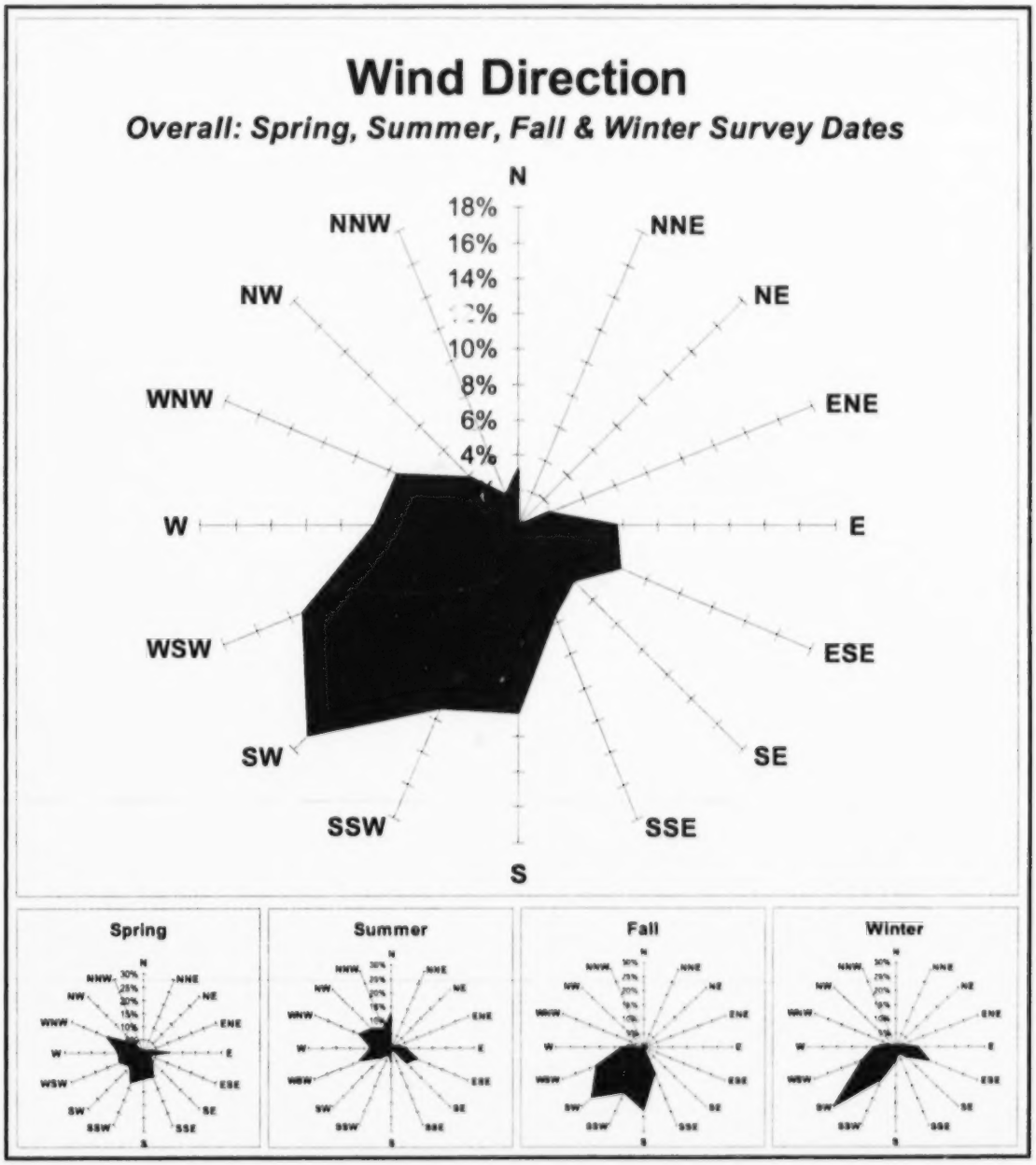


Figure 4: **Frequency distribution of wind direction measurements made during the St. Albert Surveys. The large wind rose presents all measurements made over the four seasons of monitoring; the four small wind rose plots individually represent each of the four seasons.**

RESULTS DISCUSSION

The median concentration is a common way of representing the central value for environmental data. Most environmental data usually consist of a distribution that is skewed to the right; that is most data values are low and only a few are high. The arithmetic mean will be biased by the high concentrations and will reveal a value that may not be representative of the central value for the data set. The median is the middlemost value in the data set, dividing the distribution into two equal halves. Therefore, the median is more representative of the central value of the data distribution. Fifty percent of the values in the dataset are below the median and fifty percent are above.

For example, consider a data distribution consisting of five numbers: 1, 2, 2, 3 and 10. The arithmetic mean of these data is 3.6 and the median is 2. In this case, the arithmetic mean is biased high by the extreme value of 10. The median value is actually a true central value of the data distribution.

Many areas in Alberta are pristine and certain pollutants that Alberta Environment monitors for are found in concentrations below the lower detection limit of the instruments onboard the MAML. Consider a dataset that contains 4 concentrations below the detection limit and one concentration within the operating range of the MAML instruments; with this data set, it is possible to have an overall median concentration that is 'undetectable' or below the lower detection limit while still having a 'detectable' maximum value.

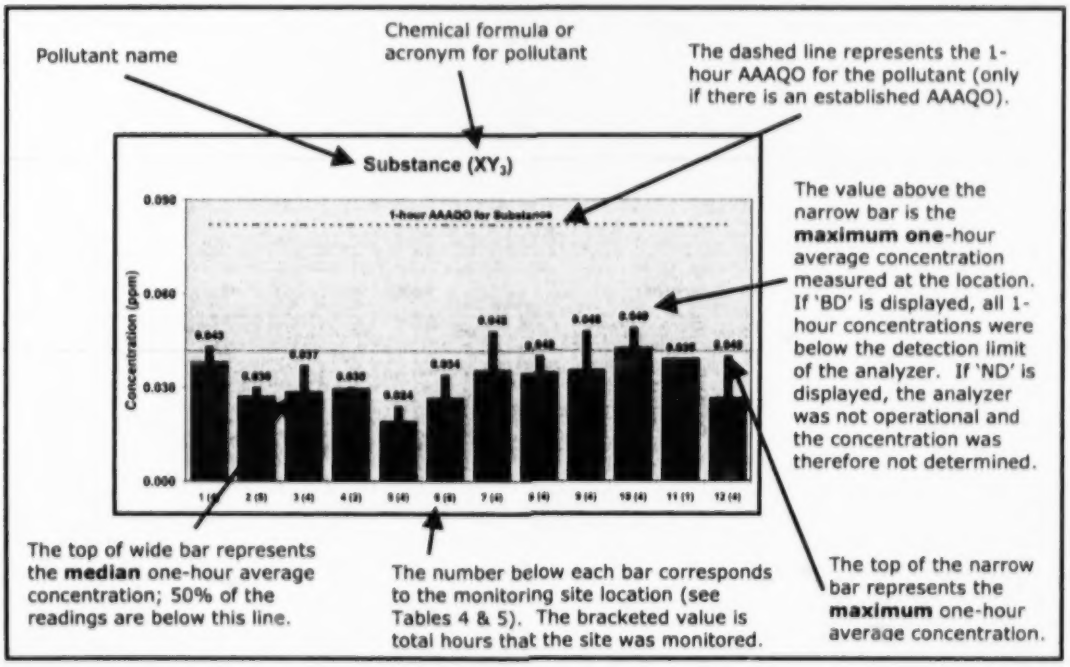

Pollutant name
Chemical formula or acronym for pollutant
The dashed line represents the 1-hour AAAQO for the pollutant (only if there is an established AAAQO).
Substance (XY3)
1-hour AAAQO for Substance
Concentration (ppm)
0.060
0.030
0.000
The value above the narrow bar is the maximum one-hour average concentration measured at the location. If 'BD' is displayed, all 1-hour concentrations were below the detection limit of the analyzer. If 'ND' is displayed, the analyzer was not operational and the concentration was therefore not determined.
The top of wide bar represents the median one-hour average concentration; 50% of the readings are below this line.
The number below each bar corresponds to the monitoring site location (see Tables 4 & 5). The bracketed value is total hours that the site was monitored.
The top of the narrow bar represents the maximum one-hour average concentration.

Figure 5: Key for interpreting the graphs in the following section.

Ammonia (NH_3)

Ammonia is a colourless gas with a well-known pungent odour; it is commonly found in household cleaners. NH_3 is produced both by natural and man-made sources. Some natural sources of NH_3 include the decay of plant material and animal waste. A small portion is also released during respiration. In Alberta, the fertilizer industry is the main industrial source of NH_3. The industry produces synthetic NH_3 for either direct application to soil as a fertilizer or as a raw material for use in the production of other high nitrogen fertilizer products. The other major source of NH_3 is commercial feedlots, specifically from their large amounts of decaying animal wastes.

Ammonia concentrations were very low at all monitoring locations in the St. Albert survey. Elevated ammonia concentrations are commonly found near feedlots, confined feeding operations and fertilizer manufacturing plants.

The highest one-hour NH_3 concentration detected during the survey (0.012 ppm) was measured at Village Landing Mall on May 11, 2004 The maximum NH_3 concentration measured at this site is less than one per cent of the one-hour Alberta Ambient Air Quality Objective.

The overall median NH_3 concentration for this survey was 0.002 ppm.

NH_3 concentrations measured in this survey are significantly lower than concentrations found in other MAML surveys. Maximum one-hour NH_3 concentrations from other MAML surveys ranged from 0.005 ppm (2001/2002 Cold Lake/Bonnyville survey) to 0.557 ppm (2001/2002 Fort Saskatchewan/Redwater survey).

Ammonia is not typically measured at Alberta's permanent air monitoring stations.

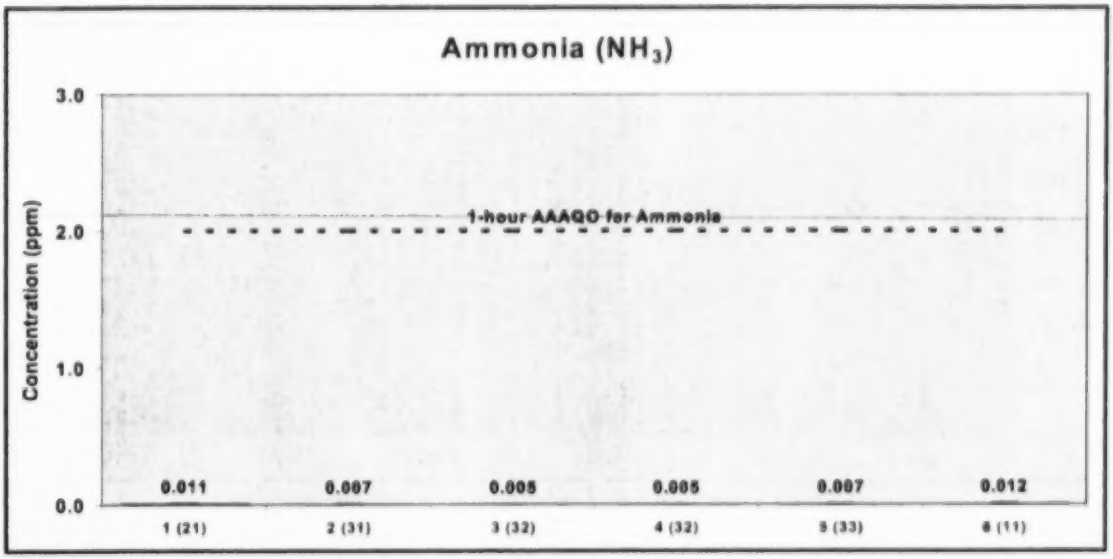
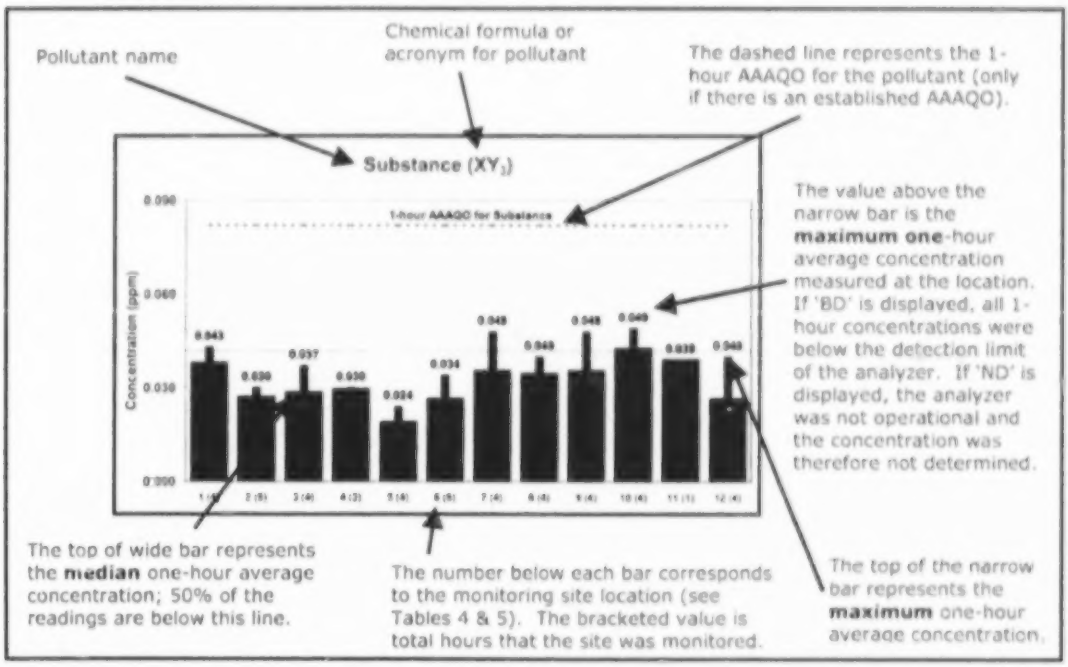


Figure 6: **One-hour median and maximum concentrations for ammonia.**

The median concentration is a common way of representing the central value for environmental data. Most environmental data usually consist of a distribution that is skewed to the right; that is most data values are low and only a few are high. The arithmetic mean will be biased by the high concentrations and will reveal a value that may not be representative of the central value for the data set. The median is the middlemost value in the data set, dividing the distribution into two equal halves. Therefore, the median is more representative of the central value of the data distribution. Fifty percent of the values in the dataset are below the median and fifty percent are above.

For example, consider a data distribution consisting of five numbers: 1, 2, 2, 3 and 10. The arithmetic mean of these data is 3.6 and the median is 2. In this case, the arithmetic mean is biased high by the extreme value of 10. The median value is actually a true central value of the data distribution.

Many areas in Alberta are pristine and certain pollutants that Alberta Environment monitors for are found in concentrations below the lower detection limit of the instruments onboard the MAML. Consider a dataset that contains 4 concentrations below the detection limit and one concentration within the operating range of the MAML instruments; with this data set, it is possible to have an overall median concentration that is 'undetectable' or below the lower detection limit while still having a 'detectable' maximum value.


Pollutant name
Chemical formula or acronym for pollutant
The dashed line represents the 1-hour AAAQO for the pollutant (only if there is an established AAAQO).
Substance (XY2)
1-hour AAAQO for Substance
Concentration (ppm)
0.090
0.060
0.030
0.000
The value above the narrow bar is the **maximum one**-hour average concentration measured at the location. If 'BD' is displayed, all 1-hour concentrations were below the detection limit of the analyzer. If 'ND' is displayed, the analyzer was not operational and the concentration was therefore not determined.
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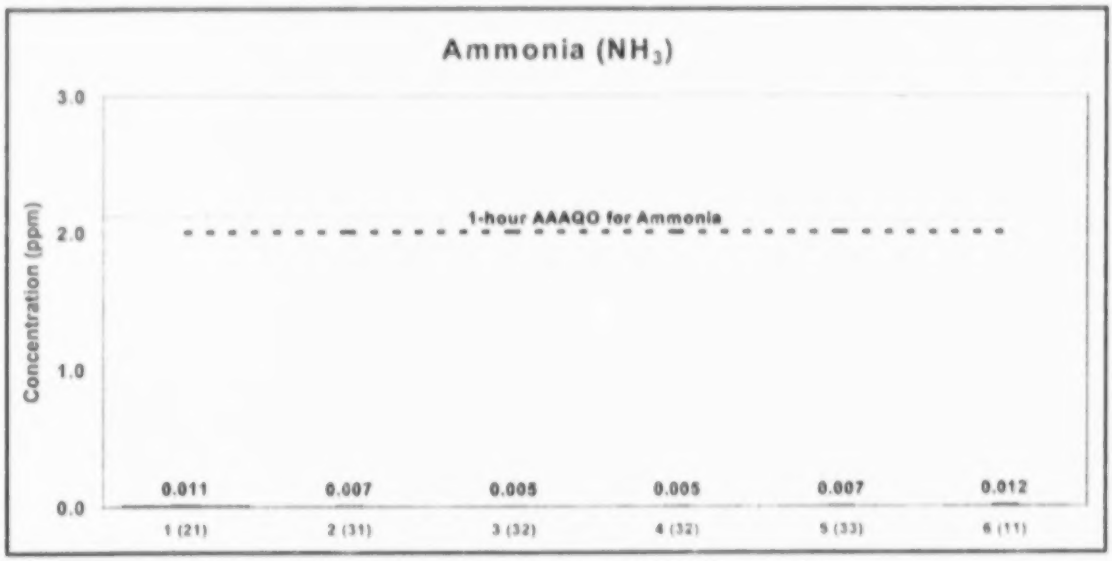

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Carbon Monoxide (CO)

Carbon monoxide (CO) is a colourless, odourless gas emitted into the atmosphere primarily by motor vehicles. Minor sources include fireplaces, industry, aircraft and natural gas combustion. The major source of carbon monoxide in urban locations is vehicle exhaust emissions.

Carbon monoxide concentrations were low at all monitoring locations. In the St. Albert Survey, CO concentrations were highest near busy intersections and were likely influenced by emissions from vehicular traffic.

The maximum one-hour CO concentration of 1.5 ppm was measured at the Riel Business Park on February 16, 2005. The maximum one-hour concentration measured at this site is 12 per cent of the one-hour objective for CO. CO at this site may have been influenced by upwind heavy construction equipment.

The overall median concentration in the St. Albert survey was 0.3 ppm.

CO concentrations measured during this survey were lower than concentrations found in other mobile surveys. Maximum one-hour CO concentrations from other MAML surveys ranged from 0.5 ppm (2000/2001 Wabaman survey) to 2.7 ppm (2000/2001 Edmonton – Whitemud Drive survey).

In 2004, the maximum one-hour CO concentration measured by a permanent monitoring station was 6.6 ppm (Edmonton Northwest).

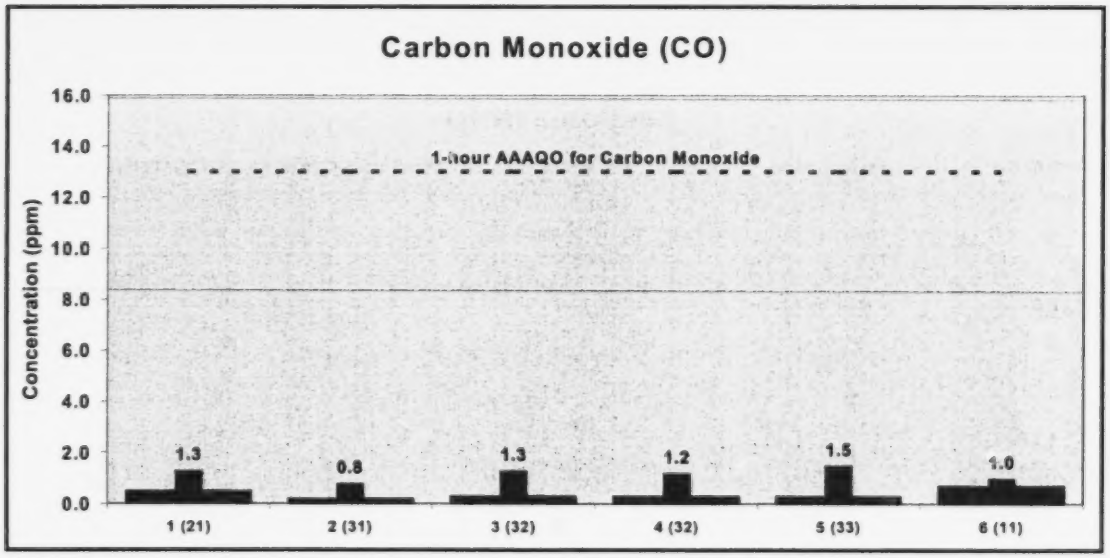

Figure 7: **One-hour median and maximum concentrations for carbon monoxide.**

Hydrocarbons (CH_4, RHC, THC, PAH)

The term "total hydrocarbons" (THC) refers to a broad family of chemicals that contain carbon and hydrogen atoms. Methane (CH_4) is the most common natural hydrocarbon in the earth's atmosphere. Reactive hydrocarbons (RHC) are important because they can contribute to summertime smog or may be toxic at high concentrations. Some sources of hydrocarbons include vegetation, vehicle emissions, oil and gas processing, chemical processing, dry cleaning, fireplaces, natural gas combustion, aircraft traffic and evaporation of solvents.

Polycyclic aromatic hydrocarbons (PAHs) are a class of chemicals that are usually contained in soot and smoke. There are more than 100 different PAHs with varying levels of toxicity. They are formed during the incomplete combustion of gasoline, diesel, oil, coal, wood, garbage or other organic substances. Tobacco smoke and charbroiled meats are common sources of PAHs. Other outdoor PAH sources include vehicle emissions, wood smoke from fireplaces, smoke from forest fires and industrial facilities. PAHs occur in the atmosphere in the vapour phase or attached to dust particles. The monitoring instrument on the MAML will analyze only particulate bound PAHs.

The maximum one-hour methane concentration of 5.1 ppm was measured at the Riel Business Park on February 26, 2005. This methane concentration is atypically high for an urban survey. The methane source at the Riel Buisness Park site may be the former landfill located in the vicinity of the Riel Recreation Area.

Similarly, a maximum methane concentration of 4.0 ppm was measured at the Village Landing Mall monitoring site on June 18th 2004. Wind direction measured on June 18th at the Village Landing Mall site was north-northwest. Under these circumstances, the former landfill site at the Riel Recreation area is aligned directly upwind from Village Landing Mall.

Wind direction on the two days that methane concentrations were notably elevated is depicted on Figure 8.

There is no AAAQO for methane however, the background concentration in rural Alberta is approximately 1.8 ppm to 2.0 ppm. Although methane was found in concentrations nearly twice that which is considered to be background, methane (at the maximum measured concentrations) is considered biologically inactive and is essentially non-toxic.

The maximum one-hour PAH concentration of 63 ng/m^3 was measured at the Riel Business Park on June 10, 2004 during the morning rush hour. Similar concentrations were recorded at the St. Albert Centre and Village Landing Mall sites during the morning and afternoon rush hours. The high PAHs values at all three sites were likely due to exhaust from the high volume of vehicular traffic.

The maximum one-hour RHC concentration of 0.6 ppm was measured on September 27, 2004 at the Albert Center site. This concentration is only marginally above

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Carbon monoxide concentrations were low at all monitoring locations. In the St. Albert Survey, CO concentrations were highest near busy intersections and were likely influenced by emissions from vehicular traffic.

The maximum one-hour CO concentration of 1.5 ppm was measured at the Riel Business Park on February 16, 2005. The maximum one-hour concentration measured at this site is 12 per cent of the one-hour objective for CO. CO at this site may have been influenced by upwind heavy construction equipment.

The overall median concentration in the St. Albert survey was 0.3 ppm.

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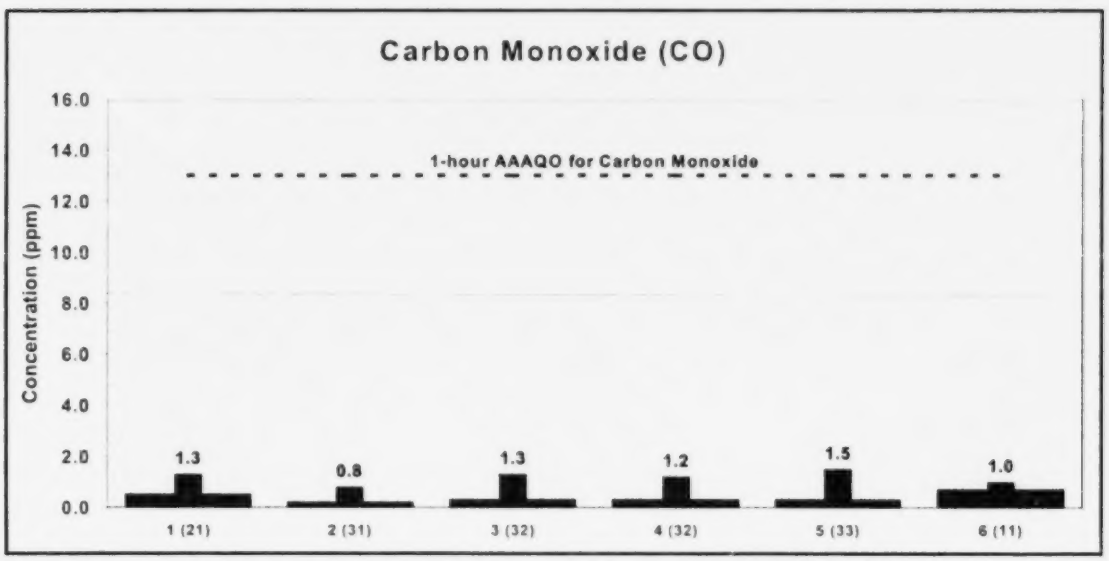

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The maximum one-hour RHC concentration of 0.6 ppm was measured on September 27, 2004 at the Albert Center site. This concentration is only marginally above

what is considered to be background for rural Alberta.

The St. Albert surveys found overall median concentrations of 2.6 ppm, 0.1 ppm and 2.7 ppm for CH_4, RHC, and THC respectively.

Maximum one-hour CH_4 concentrations from other MAML surveys ranged from 2.2 ppm (1999/2000 Bow Corridor survey) to 4.6 ppm (2001/2002 Cold Lake/Bonnyville survey).

Maximum one-hour RHC concentrations from other MAML surveys ranged from 0.5 ppm (2000/2001 Wabaman survey) to 7.1 ppm (2001/2002 Cold Lake/Bonnyville survey).

Maximum one-hour THC concentrations from other MAML surveys ranged from 3.3 ppm (2000/2001 Wabaman survey) to 9.7 ppm (2001/2002 Cold Lake/Bonnyville survey).

Maximum one-hour PAHs concentrations from other MAML surveys ranged from 11 ng/m^3 (2000/2001 Wabaman survey) to 113 ng/m^3 (2001 Whitecourt survey).

The maximum one-hour THC concentration measured by a permanent monitoring station was 25.9 ppm (Edmonton East) in 2004.

CH_4, RHC and PAHs are typically not measured at Alberta's permanent air monitoring stations.

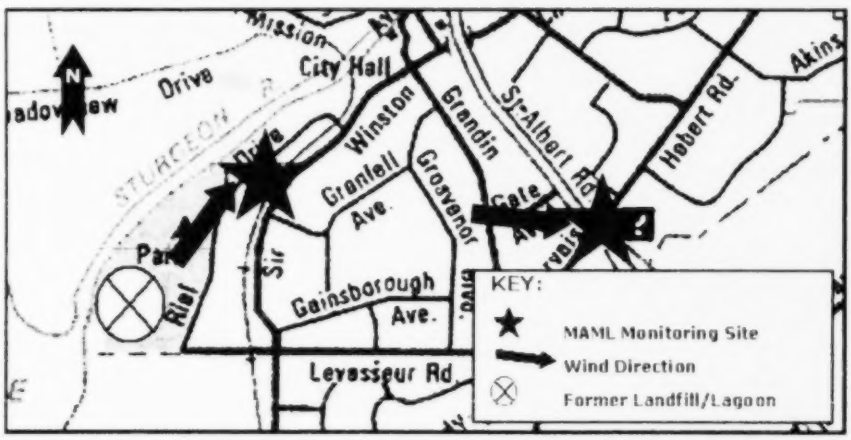

Figure 8: **Representation of wind direction at Site 5 (Riel Business Park) on February 26, 2005 and Site 6 (Village Landing Mall) on June 18 2005; the methane concentrations a these sites were 5.1 ppm and 4.0 ppm respectively. Wind direction data suggests that elevated methane concentrations at these two sites may be attributed to the upwind former landfill site (now known as the Riel Recreation Area)**

Map adapted from About Inc. (http://gocanada.about.com/)

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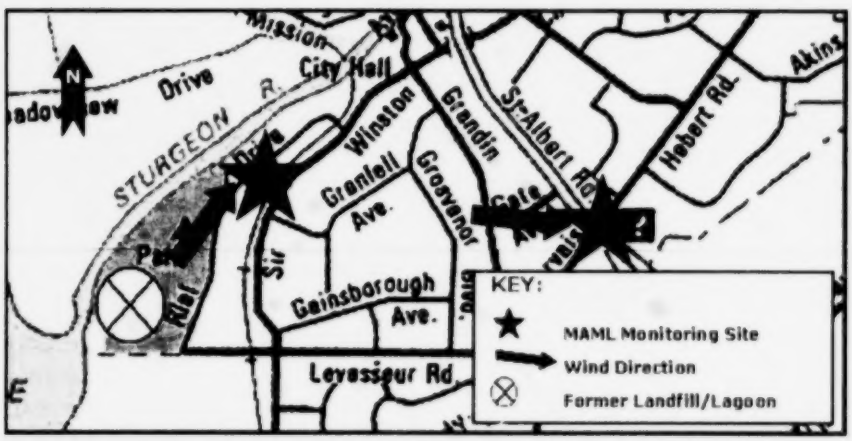

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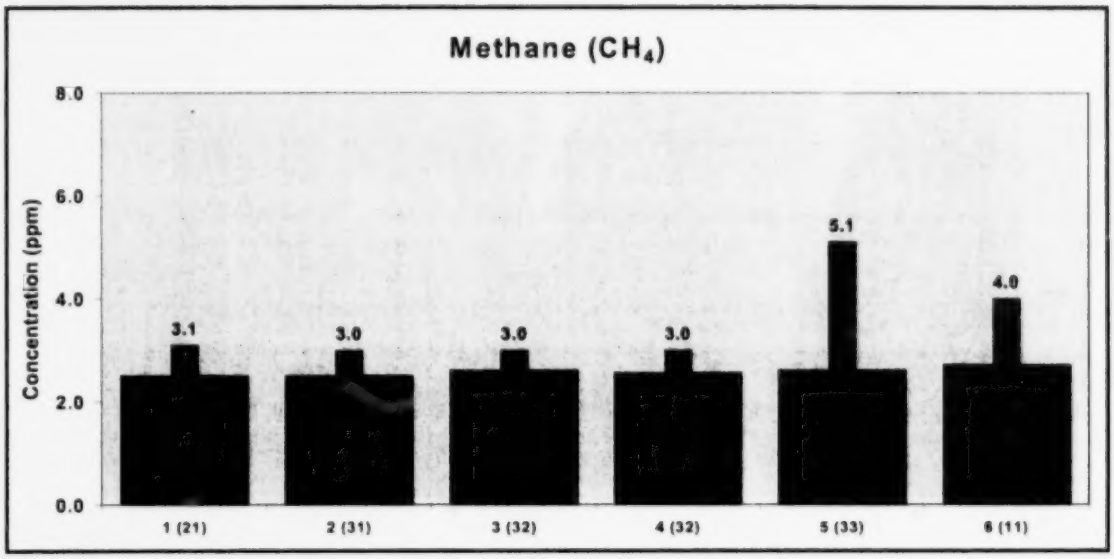

Figure 9: **One-hour median and maximum concentrations for methane.**

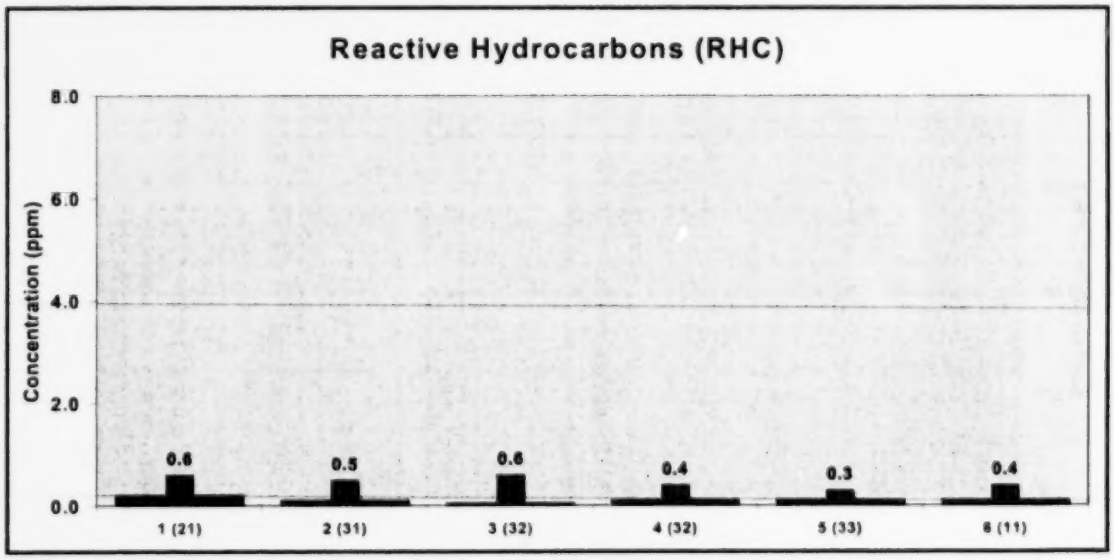

Figure 10: **One-hour median and maximum concentrations for reactive hydrocarbons.**

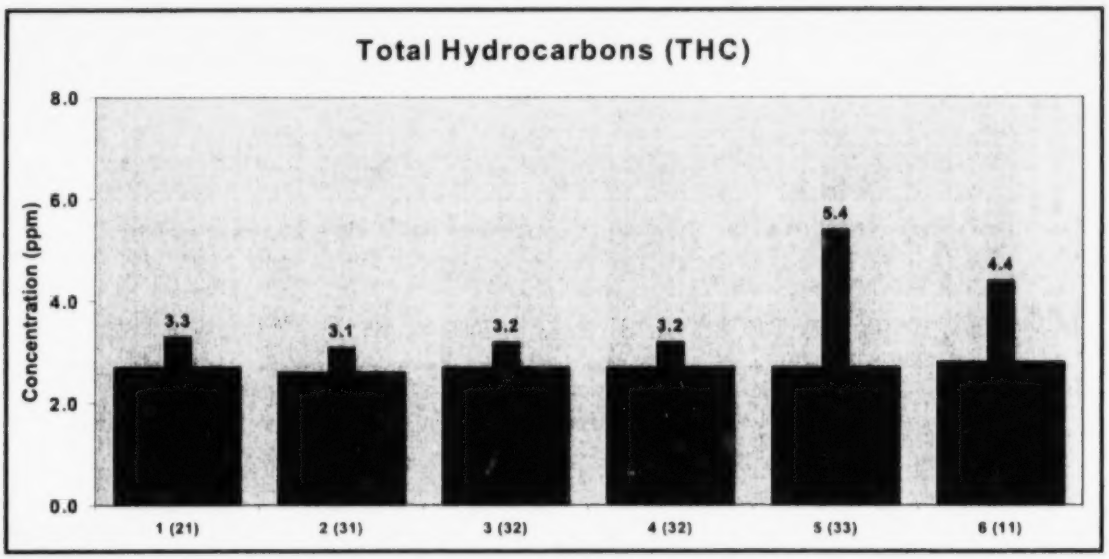

Figure 11: One-hour median and maximum concentrations for total hydrocarbons.

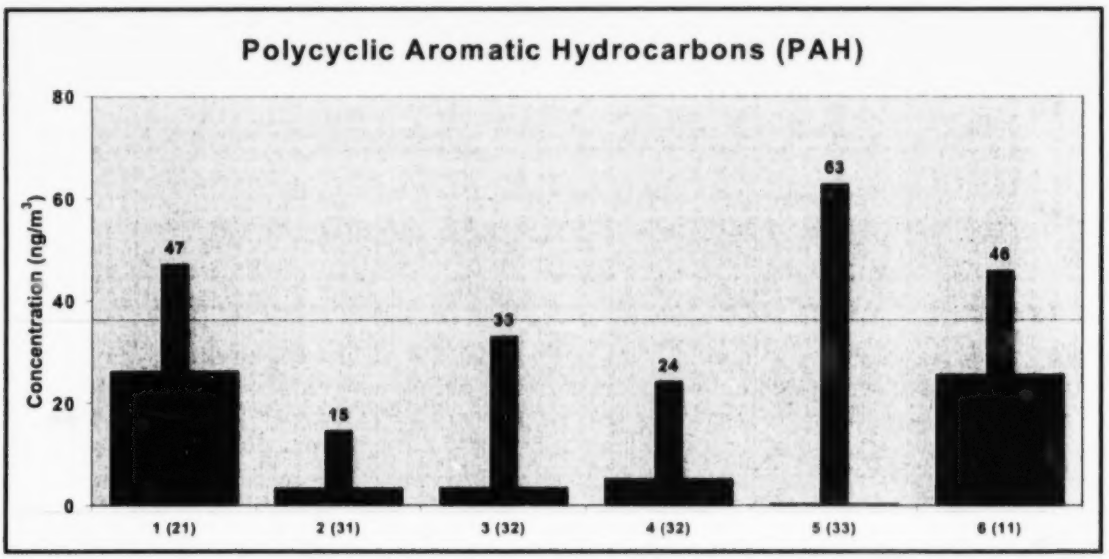

Figure 12: One-hour median and maximum concentrations for polycyclic aromatic hydrocarbons.

Oxides of Nitrogen (NO_2, NO, NO_x)

Oxides of nitrogen (NO_x) are the total of nitrogen dioxide (NO_2) and nitric oxide (NO). During high temperature combustion - as in the burning of natural gas, coal, oil and gasoline - atmospheric nitrogen may combine with molecular oxygen to form NO. NO is colourless and odourless. Most NO in the ambient air is oxidized to form NO_2. NO_2 is a reddish-brown gas with a pungent odour. The major sources of oxides of nitrogen in urban areas are vehicle and power plant emissions. Processes associated with the oil and gas industry also emit oxides of nitrogen into the atmosphere.

Nitrogen dioxide concentrations were well below Alberta's Ambient Air Quality Objective of 0.212 ppm in the St. Albert Survey.

The maximum one-hour NO_2 concentration of 0.041 ppm was measured on several occasions at different locations. This NO_2 concentration is 19 percent of the one-hour objective.

There are several possible sources of NO_2 at the St. Albert monitoring sites however, being an urban centre the dominant source is most likely emissions from vehicle traffic.

It should be noted that the maximum NO_2 concentration measured during this survey was recorded in the winter. Elevated NO_2 concentrations in the winter months may be influenced by fuel combustion for home heating in St. Albert; NOx are emitted by nearly all combustion processes.

The overall NO_2 median concentration in the St. Albert survey was 0.013 ppm.

The maximum NO_2 concentrations measured during this survey are lower than concentrations measured in other surveys. Maximum one-hour NO_2 concentration from other MAML surveys range from 0.014 ppm (2001/2002 Cold Lake/Bonnyville survey) to 0.051 ppm (2001/2002 Fort Saskatchewan/Redwater survey).

The maximum one-hour NO_2 concentration measured by a permanent monitoring station was 0.183 ppm (Fort McMurray – Athabasca Valley) in 2004.

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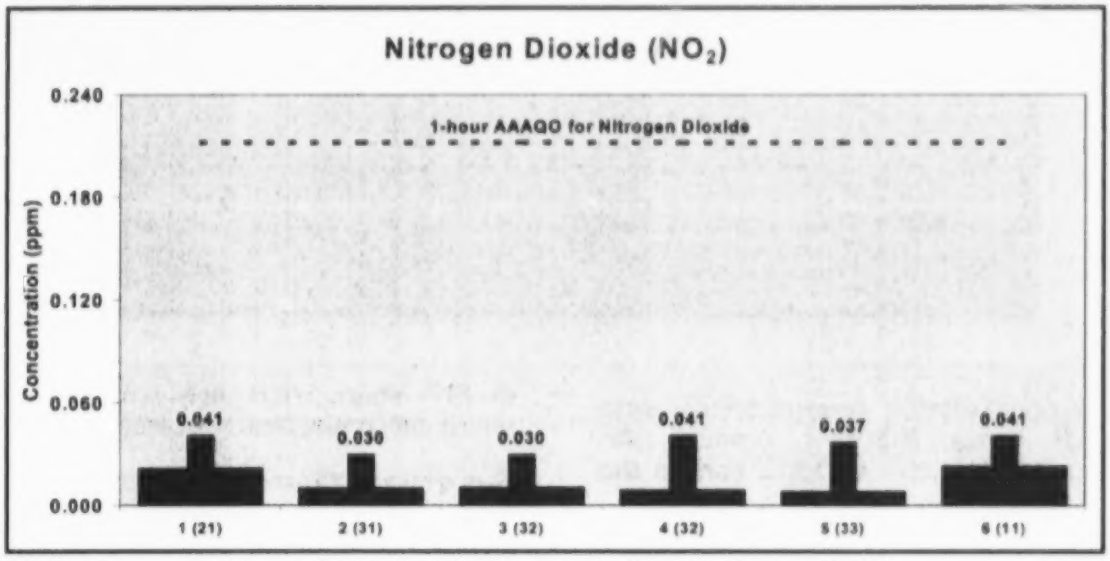

Figure 13: **One-hour median and maximum concentrations for nitrogen dioxide**

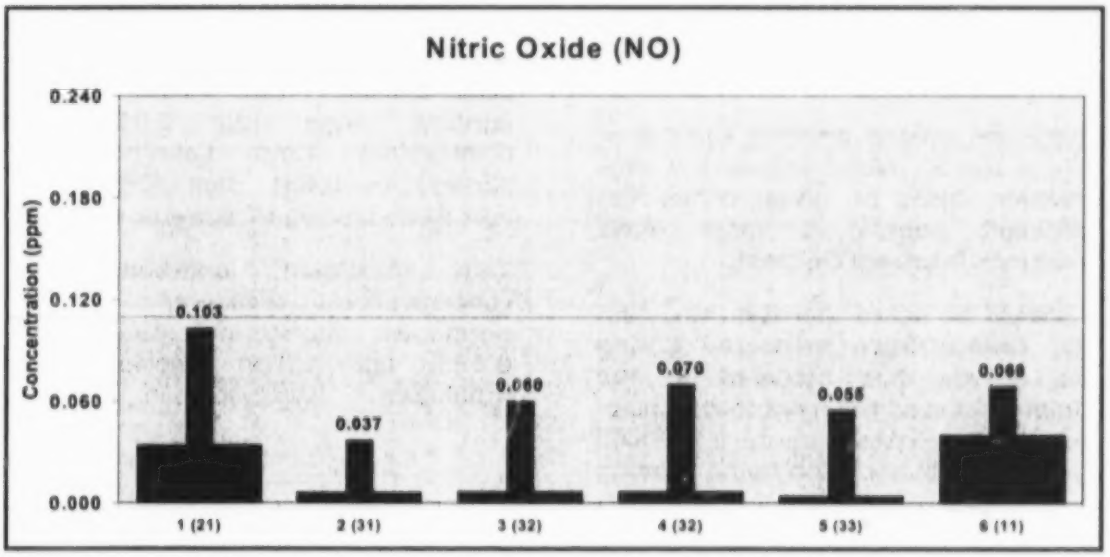

Figure 14: **One-hour median and maximum concentrations for nitric oxide.**

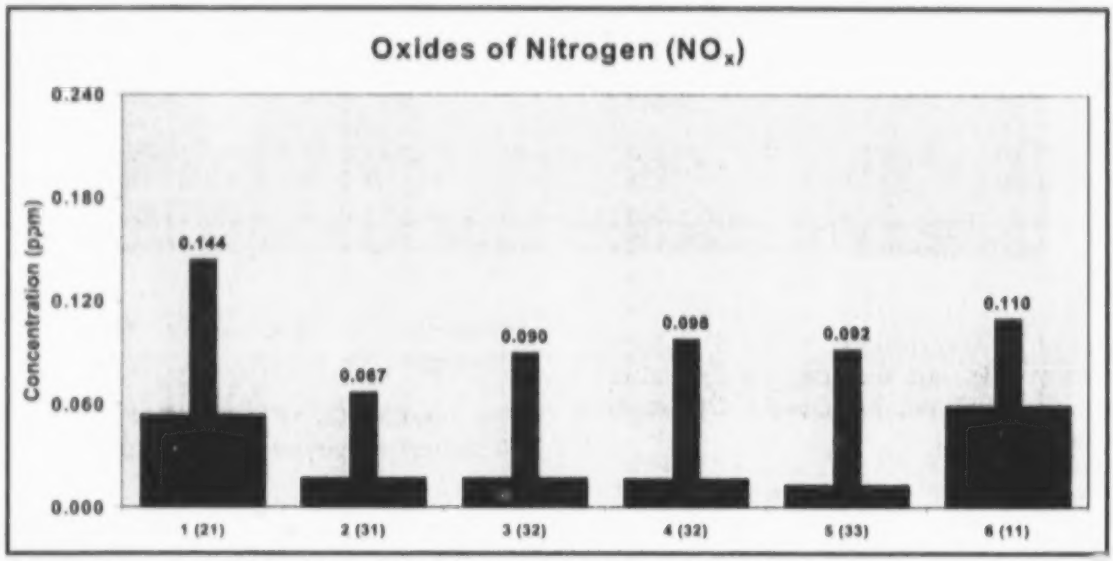

Figure 15: **One-hour median and maximum concentrations for oxides of nitrogen.**

Ozone (O_3)

Ozone in the lower atmosphere is produced by the reaction of oxides of nitrogen and volatile organic compounds in the presence of sunlight, and transport of O_3 from the upper atmosphere to ground level. Transport from the upper atmosphere is likely the dominant ozone producing process in the fall, winter and early spring seasons. O_3 concentrations are generally lower in urban centres due to the destruction of O_3 by nitric oxide.

Ozone concentrations in the St. Albert survey did not exceed the one-hour Alberta Ambient Air Quality Objective of 0.082 ppm.

The maximum one-hour O_3 concentration of 0.050 ppm was recorded at Red Willow Park on June 18, 2004. This maximum O_3 value is approximately 61 percent of the one-hour AAAQO.

Higher O_3 levels are usually observed in the afternoon because of more sunlight, warmer temperatures and more vertical mixing of the atmosphere. In the St. Albert survey, elevated concentrations of ozone were measured in the early to mid-afternoon.

The median O_3 concentration for the St. Albert survey was 0.024 ppm.

The O_3 concentrations measured in this survey are similar to those found in previous urban surveys. Maximum O_3 concentrations from other MAML surveys ranged from 0.034 ppm (2003 Banff survey) to 0.059 ppm (2000/2001 Edmonton-Whitemud survey).

The maximum O_3 concentration measured at Alberta's permanent monitoring stations was 0.092 ppm (Edmonton East) in 2004.

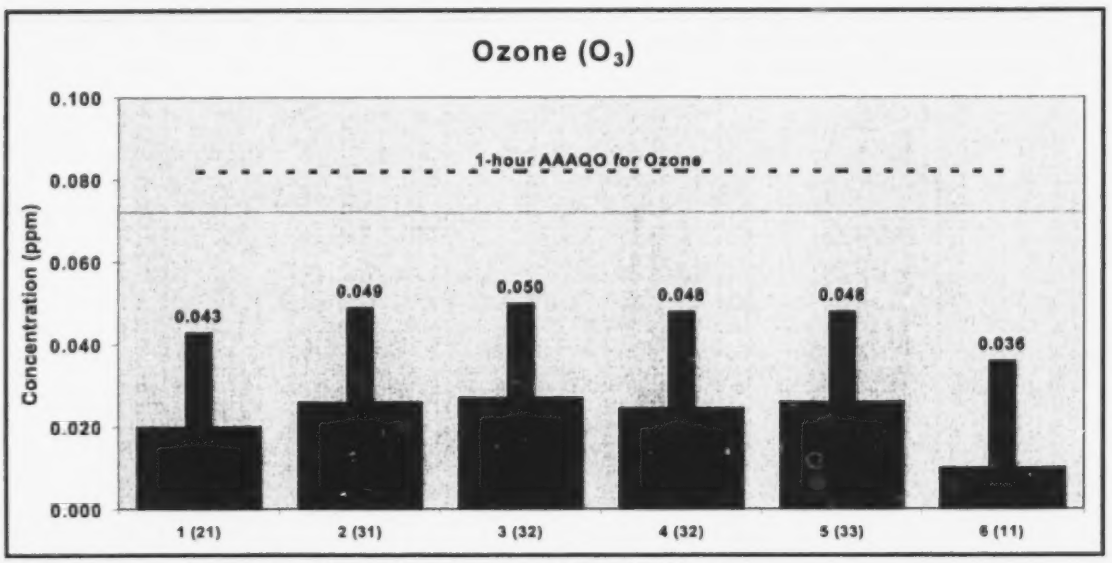

Figure 16: **One-hour median and maximum concentrations for ozone.**

Particulate Matter (TSP, PM_{10}, $PM_{2.5}$)

Total suspended particulates (TSP) refer to all particles up to 500 μm (micrometers) in diameter (a human hair is about 70μm in diameter) and are important primarily from a nuisance perspective. Particles less than 10 μm in diameter (PM_{10}) can be inhaled into the nose and throat while smaller particles, less than 2.5 μm in diameter ($PM_{2.5}$), can penetrate into the lungs. Sources of inhalable coarse particulate matter (PM10) include soil dust, resuspended road dust, agricultural dust (e.g., harvest), smoke from forest fires and wood burning. respirable particulate matter ($PM_{2.5}$) can originate in the atmosphere because of condensation processes and from combustion processes from sources such as vehicles emissions, industrial emissions, wood burning and forest fires.

Particulate matter concentrations were low at all monitoring sites in the St. Albert Survey. All one-hour $PM_{2.5}$ measurements were below the Proposed AAAQO of 80 $\mu g/m^3$, and although a direct comparison cannot be made, all measurements were also below the 'numeric' value of the 24-hour Canada-Wide Standard for $PM_{2.5}$ of 30 $\mu g/m^3$.

Maximum one-hour TSP, PM_{10} and $PM_{2.5}$ concentrations measured during the survey were 265 $\mu g/m^3$, 168 $\mu g/m^3$ and 21.0 $\mu g/m^3$, respectively.

The overall median concentrations in the Lloydminster Area survey for TSP, PM_{10} and $PM_{2.5}$ were 32 $\mu g/m^3$, 22 $\mu g/m^3$ and 3 $\mu g/m^3$, respectively.

Concentrations of TSP, PM_{10} and $PM_{2.5}$ measured during this survey were notably lower than concentrations found in other mobile surveys. Particulate concentrations were also similar to, or lower than measurements made in other mobile urban surveys where the primary source of pollution was transportation (vehicle exhaust) such as the Whitemud Drive (2000/2001) and Bow Corridor (1999/2000) surveys.

Maximum one-hour TSP concentrations from other MAML surveys ranged from 37 $\mu g/m^3$ (2003 Banff survey) to 2281 $\mu g/m^3$ (2001/2002 Cold Lake/Bonnyville survey).

Maximum one-hour PM_{10} concentrations from other MAML surveys ranged from 23 $\mu g/m^3$ (2003 Banff survey) to 1188 $\mu g/m^3$ (2001/2002 Cold Lake/Bonnyville survey).

Maximum one-hour $PM_{2.5}$ concentrations from other MAML surveys ranged from 21 $\mu g/m^3$ (2003 Banff survey) to 72 $\mu g/m^3$ (2001/2002 Cold Lake/Bonnyville survey).

The maximum one-hour PM_{10} and $PM_{2.5}$ levels measured in 2004 at the permanent stations in Alberta were 223 $\mu g/m^3$ (Edmonton Northwest) and 189 $\mu g/m^3$ (Fort McMurray – Athabasca Valley), respectively. TSP is not typically monitored at Alberta's permanent monitoring stations.

Ozone (O_3)

Ozone in the lower atmosphere is produced by the reaction of oxides of nitrogen and volatile organic compounds in the presence of sunlight, and transport of O_3 from the upper atmosphere to ground level. Transport from the upper atmosphere is likely the dominant ozone producing process in the fall, winter and early spring seasons. O_3 concentrations are generally lower in urban centres due to the destruction of O_3 by nitric oxide.

Ozone concentrations in the St. Albert survey did not exceed the one-hour Alberta Ambient Air Quality Objective of 0.082 ppm.

The maximum one-hour O_3 concentration of 0.050 ppm was recorded at Red Willow Park on June 18, 2004. This maximum O_3 value is approximately 61 percent of the one-hour AAAQO.

Higher O_3 levels are usually observed in the afternoon because of more sunlight, warmer temperatures and more vertical mixing of the atmosphere. In the St. Albert survey, elevated concentrations of ozone were measured in the early to mid-afternoon.

The median O_3 concentration for the St. Albert survey was 0.024 ppm.

The O_3 concentrations measured in this survey are similar to those found in previous urban surveys. Maximum O_3 concentrations from other MAML surveys ranged from 0.034 ppm (2003 Banff survey) to 0.059 ppm (2000/2001 Edmonton-Whitemud survey).

The maximum O_3 concentration measured at Alberta's permanent monitoring stations was 0.092 ppm (Edmonton East) in 2004.

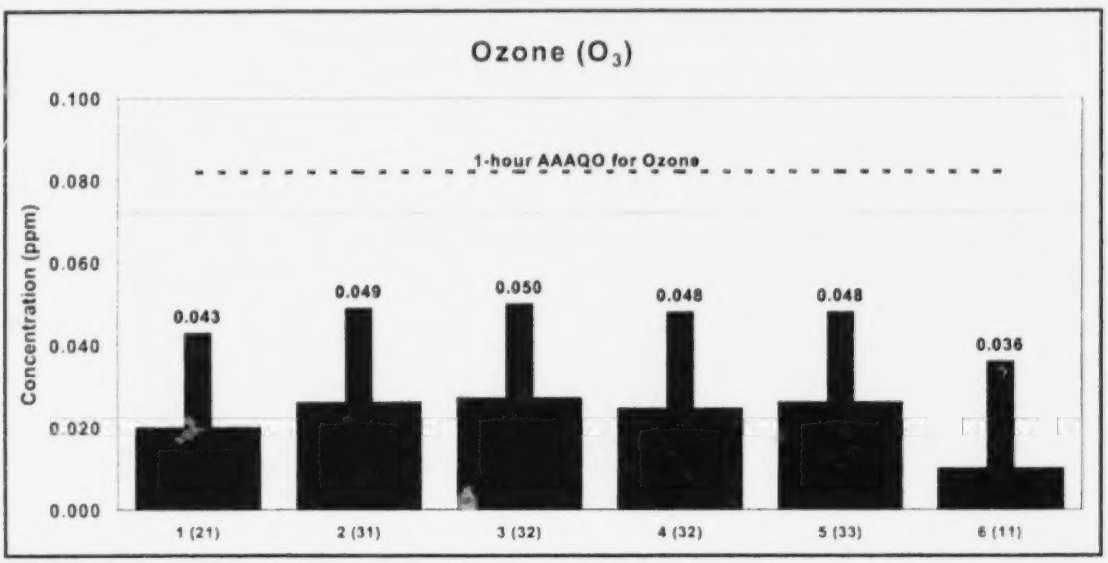

Figure 16: **One-hour median and maximum concentrations for ozone.**

Particulate Matter (TSP, PM_{10}, $PM_{2.5}$)

Total suspended particulates (TSP) refer to all particles up to 500 μm (micrometers) in diameter (a human hair is about 70μm in diameter) and are important primarily from a nuisance perspective. Particles less than 10 μm in diameter (PM_{10}) can be inhaled into the nose and throat while smaller particles, less than 2.5 μm in diameter ($PM_{2.5}$), can penetrate into the lungs. Sources of inhalable coarse particulate matter (PM10) include soil dust, resuspended road dust, agricultural dust (e.g., harvest), smoke from forest fires and wood burning. respirable particulate matter ($PM_{2.5}$) can originate in the atmosphere because of condensation processes and from combustion processes from sources such as vehicles emissions, industrial emissions, wood burning and forest fires.

Particulate matter concentrations were low at all monitoring sites in the St. Albert Survey. All one-hour $PM_{2.5}$ measurements were below the Proposed AAAQO of 80 $\mu g/m^3$, and although a direct comparison cannot be made, all measurements were also below the 'numeric' value of the 24-hour Canada-Wide Standard for $PM_{2.5}$ of 30 $\mu g/m^3$.

Maximum one-hour TSP, PM_{10} and $PM_{2.5}$ concentrations measured during the survey were 265 $\mu g/m^3$, 168 $\mu g/m^3$ and 21.0 $\mu g/m^3$, respectively.

The overall median concentrations in the Lloydminster Area survey for TSP, PM_{10} and $PM_{2.5}$ were 32 $\mu g/m^3$, 22 $\mu g/m^3$ and 3 $\mu g/m^3$, respectively.

Concentrations of TSP, PM_{10} and $PM_{2.5}$ measured during this survey were notably lower than concentrations found in other mobile surveys. Particulate concentrations were also similar to, or lower than measurements made in other mobile urban surveys where the primary source of pollution was transportation (vehicle exhaust) such as the Whitemud Drive (2000/2001) and Bow Corridor (1999/2000) surveys.

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Maximum one-hour PM_{10} concentrations from other MAML surveys ranged from 23 $\mu g/m^3$ (2003 Banff survey) to 1188 $\mu g/m^3$ (2001/2002 Cold Lake/Bonnyville survey).

Maximum one-hour $PM_{2.5}$ concentrations from other MAML surveys ranged from 21 $\mu g/m^3$ (2003 Banff survey) to 72 $\mu g/m^3$ (2001/2002 Cold Lake/Bonnyville survey).

The maximum one-hour PM_{10} and $PM_{2.5}$ levels measured in 2004 at the permanent stations in Alberta were 223 $\mu g/m^3$ (Edmonton Northwest) and 189 $\mu g/m^3$ (Fort McMurray – Athabasca Valley), respectively. TSP is not typically monitored at Alberta's permanent monitoring stations.

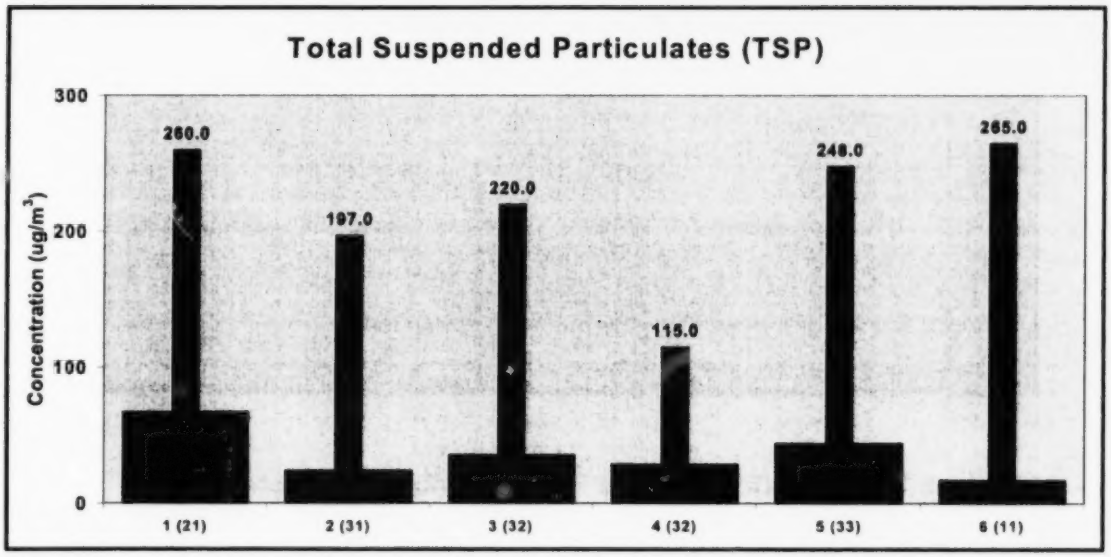

Figure 17: One-hour median and maximum concentrations for total suspended particulates.

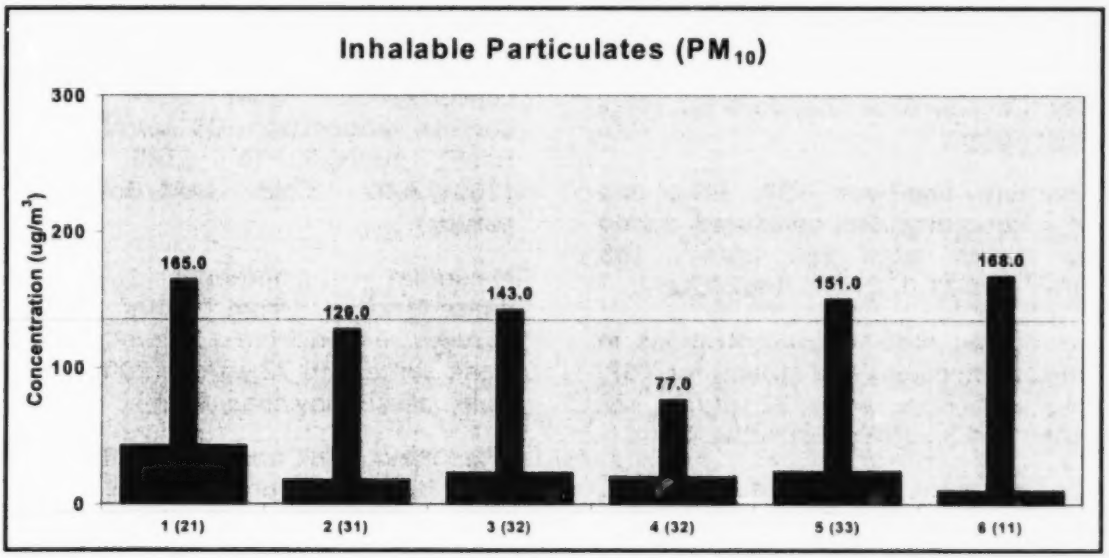

Figure 18: One-hour median and maximum concentrations for inhalable particulate matter.

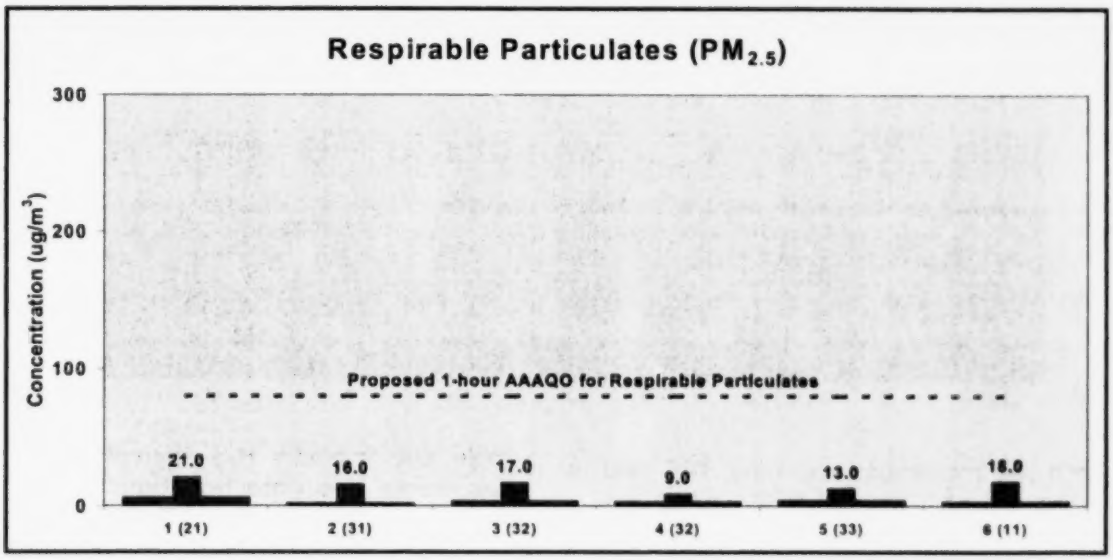

Figure 19: **One-hour median and maximum concentrations for repirable particlulate matter.**

Hydrogen Sulphide and Total Reduced Sulphur (H_2S and TRS)

Hydrogen sulphide (H_2S) is a colourless gas with a rotten egg odour. Total reduced sulphur (TRS) includes hydrogen sulphide, mercaptans, dimethyl sulphide, dimethyl disulphide and other sulphur compounds. Sulphur dioxide is not included in the determination of TRS. Industrial sources of H_2S and TRS include fugitive emissions (leakages) from petroleum refineries, tank farms for unrefined petroleum products, natural gas plants, petrochemical plants, oil sands plants, sewage treatment facilities, pulp and paper plants that use the kraft pulping process, and animal feedlots. Natural sources of H_2S include sulphur hot springs, sloughs, swamps and lakes.

Both the maximum one-hour TRS and H_2S concentrations of 0.004 ppm and 0.004 ppm were measured at the Campbell Industrial Park site on November 10, 2004. The maximum one-hour H_2S concentration of 0.004 ppm measured at this site is below the one-hour AAAQO of 0.010 ppm.

Human odour sensitivity to hydrogen sulphide is highly subjective. Although ambient concentrations of H_2S may have been above the odour threshold of sensitive individuals, all concentrations were well below levels known to cause human health effects.

In general, H_2S is generally not associated with urban emission sources and hydrogen sulphide is not manufactured, processed or otherwise used by industries located in St. Albert. Trace concentrations of hydrogen sulphide may be attributed to upwind upstream oil and gas operations processing 'sour' or sulphur-rich petroleum products.

In St. Albert, the overall median concentration of TRS was 0.001 ppm while the median H_2S concentration was below the detection limit of the MAML's analyzer.

The median H_2S and TRS concentrations measured were lower than or similar to those found in other mobile surveys.

Maximum one-hour concentrations for H_2S from other MAML surveys ranged from 0.001 ppm (2000/2001 Wabuman survey) to 0.054 ppm (2001/2002 Bonnyville survey).

Maximum one-hour concentrations for TRS from other MAML surveys ranged from 0.001 ppm (2003 Banff survey) to 0.056 ppm (2001/2002 Cold Lake/Bonnyville survey).

The maximum one-hour concentrations for H_2S and TRS monitored in 2004 at permanent monitoring stations in Alberta were 0.008 ppm (Fort McKay) and 0.036 ppm (Edmonton East), respectively. TRS is not typically monitored at permanent air monitoring stations in Alberta.

Hydrogen Sulphide and Total Reduced Sulphur (H_2S and TRS)

Hydrogen sulphide (H_2S) is a colourless gas with a rotten egg odour. Total reduced sulphur (TRS) includes hydrogen sulphide, mercaptans, dimethyl sulphide, dimethyl disulphide and other sulphur compounds. Sulphur dioxide is not included in the determination of TRS. Industrial sources of H_2S and TRS include fugitive emissions (leakages) from petroleum refineries, tank farms for unrefined petroleum products, natural gas plants, petrochemical plants, oil sands plants, sewage treatment facilities, pulp and paper plants that use the kraft pulping process, and animal feedlots. Natural sources of H_2S include sulphur hot springs, sloughs, swamps and lakes.

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Human odour sensitivity to hydrogen sulphide is highly subjective. Although ambient concentrations of H_2S may have been above the odour threshold of sensitive individuals, all concentrations were well below levels known to cause human health effects.

In general, H_2S is generally not associated with urban emission sources and hydrogen sulphide is not manufactured, processed or otherwise used by industries located in St. Albert. Trace concentrations of hydrogen sulphide may be attributed to upwind upstream oil and gas operations processing 'sour' or sulphur-rich petroleum products.

In St. Albert, the overall median concentration of TRS was 0.001 ppm while the median H_2S concentration was below the detection limit of the MAML's analyzer.

The median H_2S and TRS concentrations measured were lower than or similar to those found in other mobile surveys.

Maximum one-hour concentrations for H_2S from other MAML surveys ranged from 0.001 ppm (2000/2001 Wabuman survey) to 0.054 ppm (2001/2002 Bonnyville survey).

Maximum one-hour concentrations for TRS from other MAML surveys ranged from 0.001 ppm (2003 Banff survey) to 0.056 ppm (2001/2002 Cold Lake/Bonnyville survey).

The maximum one-hour concentrations for H_2S and TRS monitored in 2004 at permanent monitoring stations in Alberta were 0.008 ppm (Fort McKay) and 0.036 ppm (Edmonton East), respectively. TRS is not typically monitored at permanent air monitoring stations in Alberta.

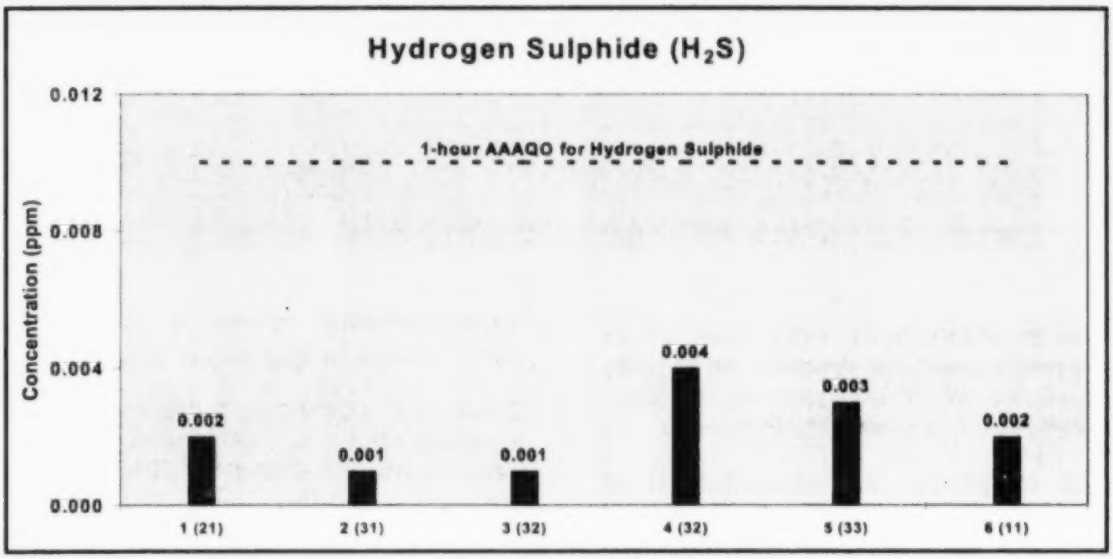

Figure 20: One-hour median and maximum concentrations for hydrogen sulphide

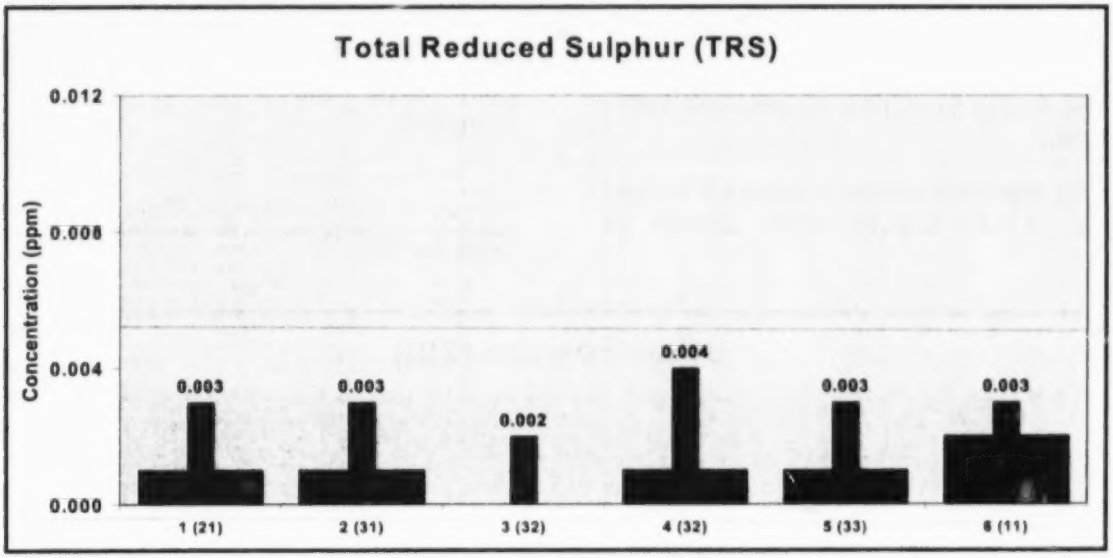

Figure 21: One-hour median and maximum concentrations for total reduced sulphur.

Sulphur Dioxide (SO_2)

Sulphur dioxide (SO_2) is a colourless gas with a pungent odour. In Alberta, it is estimated that 45% of SO_2 emissions are produced by natural gas processing plants while oil sands and power plants produce about 26% and 21% of SO_2 emissions, respectively[1]. Other sources include gas plant flares, oil refineries, pulp and paper mills and fertilizer plants.

SO_2 concentrations were well below Alberta's one-hour Ambient Air Quality Objective of 0.172 ppm at all sites monitored in the St. Albert Survey.

The maximum SO_2 concentration of 0.011 ppm was measured on February 18, 2005 at the Village Landing Mall site. This is approximately six percent of the Alberta Ambient Air Quality Objective for sulphur dioxide.

The overall median concentration of SO_2 in the St. Albert survey was 0.001 ppm.

SO_2 concentrations measured in the St. Albert survey were similar to measurements made in previous mobile surveys in urban areas.

Maximum one-hour sulphur dioxide concentrations in other MAML surveys ranged from 0.002 ppm (2003 Banff survey) to 0.092 ppm (1999/2000 Bow Corridor survey).

In 2004, the maximum one-hour sulphur dioxide concentrations measured at permanent monitoring stations in Alberta ranged from 0.006 ppm (Red Deer) to 0.705 ppm (Mannix).

[1] *Environment Canada. 1998. 1995 Criteria Air Contaminant Emissions Inventory Summaries. Pollution Data Branch, Environment Canada*

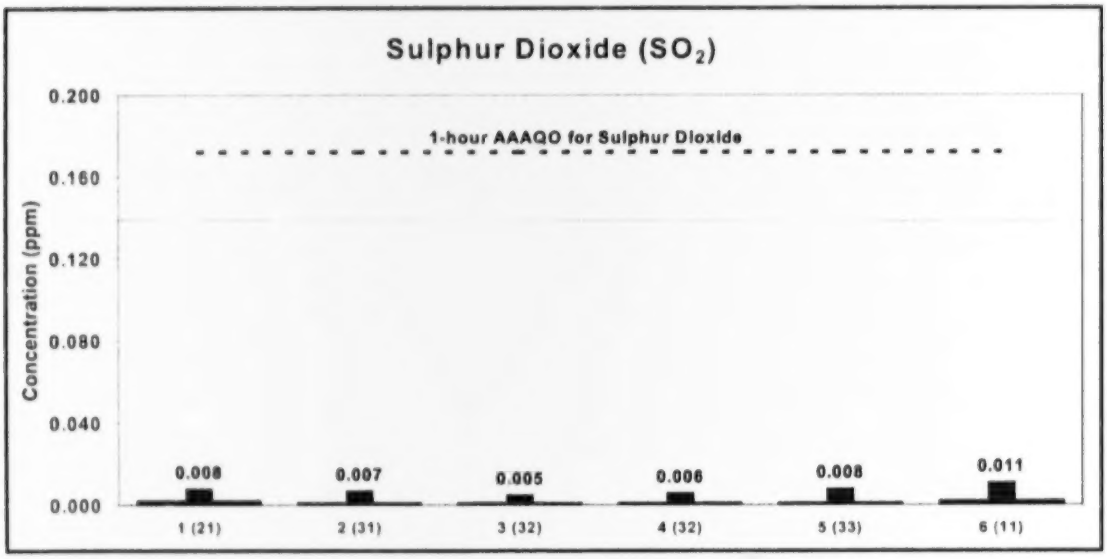

Figure 22: **One-hour median and maximum concentrations for sulphur dioxide.**

Sulphur Dioxide (SO_2)

Sulphur dioxide (SO_2) is a colourless gas with a pungent odour. In Alberta, it is estimated that 45% of SO_2 emissions are produced by natural gas processing plants while oil sands and power plants produce about 26% and 21% of SO_2 emissions, respectively[1]. Other sources include gas plant flares, oil refineries, pulp and paper mills and fertilizer plants.

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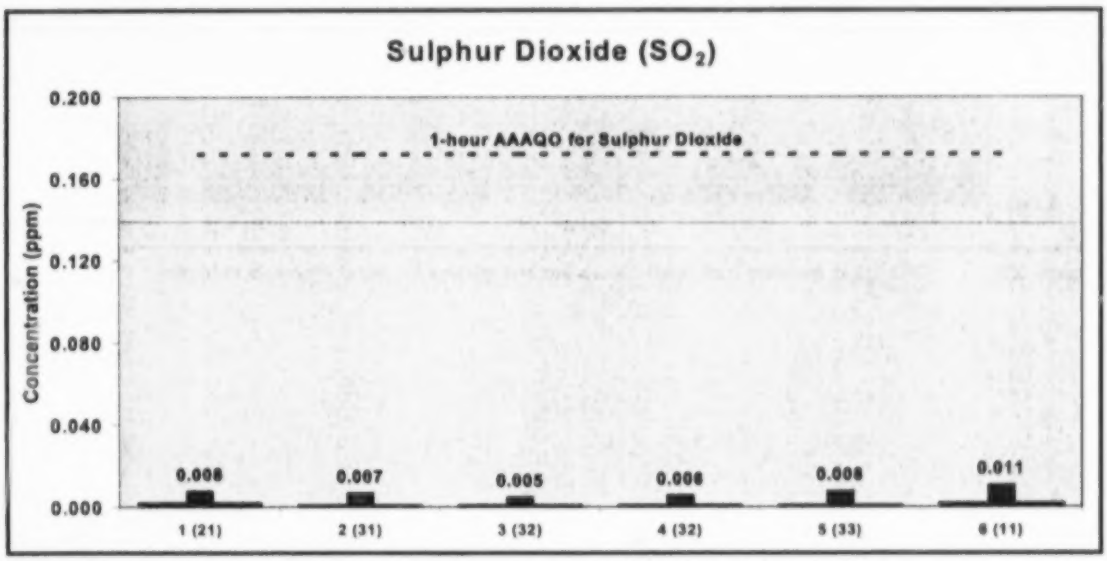

Figure 22: **One-hour median and maximum concentrations for sulphur dioxide.**

Appendix A

Monitoring Data

Table A1: Median one-hour pollutant concentrations for each site monitored in St. Albert.

Monitoring Location	NH_3	CO	Hydrocarbons				Oxides of Nitrogen			O_3	Particulates			Sulphur Compounds		
			CH_4	RHC	THC	PAH	NO_2	NO	NO_X		TSP	PM_{10}	$PM_{2.5}$	H_2S	TRS	SO_2
	ppm	ppm	ppm	ppm	ppm	ng/m³	ppm	ppm	ppm	ppm	µg/m³	µg/m³	µg/m³	ppm	ppm	ppm
1. **St. Albert Centre.** Highway 2 and Bellerose Drive.	0.007	0.5	2.5	0.2	2.7	26	0.022	0.034	0.054	0.020	67	43	6	bd	0.001	0.002
2. **Lacombe Park.** Larose Drive and Larson Drive.	0.001	0.2	2.5	0.1	2.6	3	0.010	0.006	0.017	0.026	24	18	2	bd	0.001	0.001
3. **Red Willow Park.** Boudreau Road and Sturgeon Road.	0.001	0.3	2.6	0.1	2.7	3	0.011	0.007	0.017	0.027	36	23	4	bd	0.000	0.001
4. **Campbell Business Park.** Cural Drive and Carswell Street.	0.001	0.3	2.6	0.1	2.7	5	0.009	0.007	0.017	0.025	29	20	3	bd	0.001	0.001
5. **Riel Business Park.** Riel Drive and Rayborn Crescent.	0.001	0.3	2.6	0.1	2.7	bd	0.008	0.004	0.013	0.026	44	24	4	bd	0.001	0.001
6. **Village Landing Mall.** Highway 2 and Gervais Road.	0.002	0.7	2.7	0.1	2.8	26	0.023	0.040	0.059	0.010	17	10	3	bd	0.002	0.002

Table A2: Maximum one-hour pollutant concentrations for each site monitored in St. Albert.

Monitoring Location	NH_3	CO	Hydrocarbons				Oxides of Nitrogen			O_3	Particulates			Sulphur Compounds		
			CH_4	RHC	THC	PAH	NO_2	NO	NO_X		TSP	PM_{10}	$PM_{2.5}$	H_2S	TRS	SO_2
	ppm	ppm	ppm	ppm	ppm	ng/m³	ppm	ppm	ppm	ppm	µg/m³	µg/m³	µg/m³	ppm	ppm	ppm
1. **St. Albert Centre.** Highway 2 and Bellerose Drive.	0.011	1.3	3.1	0.6	3.3	47	0.041	0.103	0.144	0.043	260	165	21	0.002	0.003	0.008
2. **Lacombe Park.** Larose Drive and Larson Drive.	0.007	0.8	3.0	0.5	3.1	15	0.030	0.037	0.067	0.049	197	129	16	0.001	0.003	0.007
3. **Red Willow Park.** Boudreau Road and Sturgeon Road.	0.005	1.3	3.0	0.6	3.2	33	0.030	0.060	0.090	0.050	220	143	17	0.001	0.002	0.005
4. **Campbell Business Park.** Cural Drive and Carswell Street.	0.005	1.2	3.0	0.4	3.2	24	0.041	0.070	0.098	0.048	115	77	9	0.004	0.004	0.006
5. **Riel Business Park.** Riel Drive and Rayborn Crescent.	0.007	1.5	5.1	0.3	5.4	63	0.037	0.055	0.092	0.048	248	151	13	0.003	0.003	0.008
6. **Village Landing Mall.** Highway 2 and Gervais Road.	0.012	1.0	4.0	0.4	4.4	46	0.041	0.069	0.110	0.036	265	168	18	0.002	0.003	0.011

NOTES:
ND – not determined (analyzer not functioning)
bd – below detection limit of analyzer

Table A3: Median one-hour air pollutant concentrations in Alberta.

Air Quality Station or Survey Name	Station or Survey Type	Monitoring Period	CO ppm	O_3 ppm	THC ppm	CH_4 ppm	RHC ppm	SO_2 ppm	NO_2 ppm	NH_3 ppm	TRS ppm	H_2S ppm	TSP µg/m³	PM_{10} µg/m³	$PM_{2.5}$ µg/m³	PAHs ng/m³
St. Albert (current survey)	mobile survey	Apr. 2003 - Mar. 2005	0.3	0.024	2.7	2.6	0.1	0.001	0.012	0.002	0.001	bd	33	23	4	5
Lloydminster[1]	mobile survey	Jan. 2002 to Nov. 2004	0.2	0.030	2.5	2.2	0.2	0.001	0.006	0.001	0.001	bd	19	13	2	3
Lakeland Area[1]	mobile survey	May 2003 to Sep. 2004	0.2	0.031	2.6	2.4	0.2	bd	0.002	0.002	bd	bd	14	9	1	bd
Banff[1]	mobile survey	Nov. 19 to 22, 2003	0.5	0.018	2.7	2.5	0.2	0.000	0.008	0.004	0.000	0.001	7	5	1	11
Fort Saskatchewan/Redwater[1]	mobile survey	May 2001 to Mar. 2002	0.3	0.026	2.1	2.1	0.1	0.001	0.004	0.001	bd	bd	39	22	3	bd
Cold Lake/Bonnyville/Elk Point[1]	mobile survey	Mar. 2001 to Feb. 2002	0.2	0.031	2.1	1.9	0.1	0.000	0.003	0.000	0.001	0.000	16	10	2	1
Whitecourt/Swan Hills/Shiningbank Lake[1]	mobile survey	Mar. 2001 to June 2001	0.2	0.027	2.3	2.0	0.3	0.004	0.005	0.001	0.001	0.000	47	29	4	1
Wabuman[1]	mobile survey	July 2000 to Sep. 2001	0.2	0.027	2.0	1.9	0.1	0.002	0.005	0.004	0.000	0.000	34	22	3	1
Edmonton (Whitemud Drive)[1]	mobile survey	June 2000 to July 2001	0.4	0.019	2.2	2.0	0.1	0.002	0.014	0.00	0.000	0.000	41	24	3	8
Bow Corridor[1]	mobile survey	Dec. 1999 to Sep. 2000	0.2	0.030	1.9	1.8	0.1	0.001	0.007	0.001	0.001	0.000	74	40	4	4
Permanent Continuous Monitoring Stations																
Beaverlodge[2]	rural	Jan. 2004 to Dec. 2004	n/a	0.031	n/a	n/a	n/a	bd	0.003	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Calgary Central[2]	urban	Jan. 2004 to Dec. 2004	0.4	0.014	2.0	n/a	n/a	n/a	0.023	n/a	n/a	n/a	n/a	19	5	n/a
Calgary East[2]	urban	Jan. 2004 to Dec. 2004	0.4	0.015	2.2	n/a	n/a	0.001	0.020	n/a	n/a	0.001	n/a	n/a	6	n/a
Calgary Northwest[2]	urban	Jan. 2004 to Dec. 2004	0.3	0.022	2.0	n/a	n/a	n/a	0.015	n/a	n/a	n/a	n/a	n/a	4	n/a
Edmonton Central[2]	urban	Jan. 2004 to Dec. 2004	0.4	0.015	2.1	n/a	n/a	n/a	0.020	n/a	n/a	n/a	n/a	n/a	5	n/a
Edmonton East[2]	urban	Jan. 2004 to Dec. 2004	0.0	0.021	2.3	n/a	n/a	0.001	0.018	n/a	n/a	bd	n/a	n/a	4	n/a
Edmonton Northwest[2]	urban	Jan. 2004 to Dec. 2004	0.3	0.018	2.0	n/a	n/a	n/a	0.014	n/a	n/a	n/a	n/a	17	4	n/a
Fort Saskatchewan[2]	small urban	Jan. 2004 to Dec. 2004	3.1	0.022	1.9	n/a	n/a	0.001	0.007	0.002	n/a	bd	n/a	n/a	3	n/a
Red Deer[2]	small urban	Jan. 2004 to Dec. 2004	0.3	0.019	1.9	n/a	n/a	bd	0.006	n/a	n/a	bd	n/a	n/a	4	n/a
Buffalo Viewpoint[3]	industrial	Jan. 2004 to Dec. 2004	n/a	n/a	1.9	n/a	n/a	bd	n/a	n/a	n/a	bd	n/a	n/a	n/a	n/a
Fort Chipewyan[3]	rural	Jan. 2004 to Dec. 2004	n/a	0.023	n/a	n/a	n/a	bd	0.038	n/a	n/a	n/a	n/a	n/a	2	n/a
Fort McKay[3]	rural	Jan. 2004 to Dec. 2004	n/a	0.023	1.8	n/a	n/a	bd	0.003	n/a	bd	n/a	n/a	n/a	2	n/a
Fort McMurray (Athabasca Valley)[3]	small urban	Jan. 2004 to Dec. 2004	0.2	0.020	3.5	n/a	n/a	bd	0.007	n/a	0.001	n/a	n/a	n/a	2	n/a
Fort McMurray (Patricia McInnes)[3]	small urban	Jan. 2004 to Dec. 2004	n/a	0.022	1.9	n/a	n/a	0.001	0.004	n/a	bd	n/a	n/a	n/a	3	n/a
Mannix[3]	industrial	Jan. 2004 to Dec. 2004	n/a	n/a	1.9	n/a	n/a	0.001	n/a	n/a	n/a	bd	n/a	n/a	n/a	n/a
Mildred Lake[3]	industrial	Jan. 2004 to Dec. 2004	n/a	n/a	1.9	n/a	n/a	bd	n/a	n/a	n/a	bd	n/a	n/a	n/a	n/a
Carrot Creek[4]	rural	Jan. 2004 to Dec. 2004	n/a	0.029	n/a	n/a	n/a	bd	0.004	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Hightower Ridge[4]	background	Jan. 2004 to Dec. 2004	n/a	0.045	n/a	n/a	n/a	bd	0.001	n/a	n/a	n/a	n/a	5	1	n/a
Tomahawk[4]	rural	Jan. 2004 to Dec. 2004	n/a	0.030	n/a	n/a	n/a	0.001	0.003	n/a	n/a	n/a	n/a	9	3	n/a
Violet Grove[4]	rural	Jan. 2004 to Dec. 2004	n/a	0.034	2.0	n/a	n/a	0.001	0.002	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Caroline[5]	rural	Jan. 2004 to Dec. 2004	n/a	0.026	2.2	n/a	n/a	bd	0.002	n/a	bd	n/a	n/a	n/a	n/a	n/a

NOTES:

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6 - Station operated by the Parkland Airshed Management Association.

n/a - Parameter not monitored or data not available.
bd - Below lower detection limit of analyzer

Table A1: Median one-hour pollutant concentrations for each site monitored in St. Albert.

Monitoring Location		NH_3	CO	Hydrocarbons				Oxides of Nitrogen			O_3	Particulates			Sulphur Compounds		
				CH_4	RHC	THC	PAH	NO_2	NO	NO_x		TSP	PM_{10}	$PM_{2.5}$	H_2S	TRS	SO_2
		ppm	ppm	ppm	ppm	ppm	ng/m³	ppm	ppm	ppm	ppm	µg/m³	µg/m³	µg/m³	ppm	ppm	ppm
1.	**St. Albert Centre.** Highway 2 and Bellerose Drive.	0.007	0.5	2.5	0.2	2.7	26	0.022	0.034	0.054	0.020	67	43	6	bd	0.001	0.002
2.	**Lacombe Park.** Larose Drive and Larson Drive.	0.001	0.2	2.5	0.1	2.6	3	0.010	0.006	0.017	0.026	24	18	2	bd	0.001	0.001
3.	**Red Willow Park.** Boudreau Road and Sturgeon Road.	0.001	0.3	2.6	0.1	2.7	3	0.011	0.007	0.017	0.027	36	23	4	bd	0.000	0.001
4.	**Campbell Business Park.** Cural Drive and Carswell Street.	0.001	0.3	2.6	0.1	2.7	5	0.009	0.007	0.017	0.025	29	20	3	bd	0.001	0.001
5.	**Riel Business Park.** Riel Drive and Rayborn Crescent.	0.001	0.3	2.6	0.1	2.7	bd	0.008	0.004	0.013	0.026	44	24	4	bd	0.001	0.001
6.	**Village Landing Mall.** Highway 2 and Gervais Road.	0.002	0.7	2.7	0.1	2.8	26	0.023	0.040	0.059	0.010	17	10	3	bd	0.002	0.002

Table A2: Maximum one-hour pollutant concentrations for each site monitored in St. Albert.

Monitoring Location		NH_3	CO	Hydrocarbons				Oxides of Nitrogen			O_3	Particulates			Sulphur Compounds		
				CH_4	RHC	THC	PAH	NO_2	NO	NO_x		TSP	PM_{10}	$PM_{2.5}$	H_2S	TRS	SO_2
		ppm	ppm	ppm	ppm	ppm	ng/m³	ppm	ppm	ppm	ppm	µg/m³	µg/m³	µg/m³	ppm	ppm	ppm
1.	**St. Albert Centre.** Highway 2 and Bellerose Drive.	0.011	1.3	3.1	0.6	3.3	47	0.041	0.103	0.144	0.043	260	165	21	0.002	0.003	0.008
2.	**Lacombe Park.** Larose Drive and Larson Drive.	0.007	0.8	3.0	0.5	3.1	15	0.030	0.037	0.067	0.049	197	129	16	0.001	0.003	0.007
3.	**Red Willow Park.** Boudreau Road and Sturgeon Road.	0.005	1.3	3.0	0.6	3.2	33	0.030	0.060	0.090	0.050	220	143	17	0.001	0.002	0.005
4.	**Campbell Business Park.** Cural Drive and Carswell Street.	0.005	1.2	3.0	0.4	3.2	24	0.041	0.070	0.098	0.048	115	77	9	0.004	0.004	0.006
5.	**Riel Business Park.** Riel Drive and Rayborn Crescent.	0.007	1.5	5.1	0.3	5.4	63	0.037	0.055	0.092	0.048	248	151	13	0.003	0.003	0.008
6.	**Village Landing Mall.** Highway 2 and Gervais Road.	0.012	1.0	4.0	0.4	4.4	46	0.041	0.069	0.110	0.036	265	168	18	0.002	0.003	0.011

NOTES:
ND - not determined (analyzer not functioning)
bd - below detection limit of analyzer

Table A3: Median one-hour air pollutant concentrations in Alberta.

Air Quality Station or Survey Name	Station or Survey Type	Monitoring Period	CO ppm	O_3 ppm	THC ppm	CH_4 ppm	RHC ppm	SO_2 ppm	NO_2 ppm	NH_3 ppm	TRS ppm	H_2S ppm	TSP $\mu g/m^3$	PM_{10} $\mu g/m^3$	$PM_{2.5}$ $\mu g/m^3$	PAHs ng/m^3
St. Albert (current survey)	mobile survey	April 2003 - Mar. 2005	0.3	0.024	2.7	2.6	0.1	0.001	0.012	0.002	0.001	bd	33	23	4	5
Lloydminster[1]	mobile survey	Jan. 2002 to Nov. 2004	0.2	0.030	2.5	2.2	0.2	0.001	0.006	0.001	0.001	bd	19	13	2	3
Lakeland Area[1]	mobile survey	May 2003 to Sep. 2004	0.2	0.031	2.6	2.4	0.2	bd	0.002	0.002	bd	bd	14	9	1	bd
Banff[1]	mobile survey	Nov. 19 to 22, 2003	0.5	0.018	2.7	2.5	0.2	0.000	0.008	0.004	0.000	0.001	7	5	1	11
Fort Saskatchewan/Redwater[1]	mobile survey	May 2001 to Mar. 2002	0.3	0.029	2.1	2.1	0.1	0.001	0.004	0.001	bd	bd	39	22	3	bd
Cold Lake/Bonnyville/Elk Point[1]	mobile survey	Mar. 2001 to Feb. 2002	0.2	0.031	2.1	1.9	0.1	0.000	0.003	0.000	0.001	0.000	16	10	2	1
Whitecourt/Swan Hills/Shiningbank Lake[1]	mobile survey	Mar. 2001 to June 2001	0.2	0.027	2.3	2.0	0.3	0.004	0.005	0.001	0.001	0.000	47	29	4	1
Wabamun[1]	mobile survey	July 2000 to Sep. 2001	0.2	0.027	2.0	1.9	0.1	0.002	0.005	0.004	0.000	0.000	34	22	3	1
Edmonton (Whitemud Drive)[1]	mobile survey	June 2000 to July 2001	0.4	0.019	2.2	2.0	0.1	0.002	0.014	0.00.	0.000	0.000	41	24	3	8
Bow Corridor[1]	mobile survey	Dec. 1999 to Sep. 2000	0.2	0.030	1.9	1.8	0.1	0.001	0.007	0.001	0.001	0.000	74	40	4	4
Permanent Continuous Monitoring Stations																
Beaverlodge[2]	rural	Jan. 2004 to Dec. 2004	n/a	0.031	n/a	n/a	n/a	bd	0.003	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Calgary Central[2]	urban	Jan. 2004 to Dec. 2004	0.4	0.014	2.0	n/a	n/a	n/a	0.023	n/a	n/a	n/a	n/a	19	5	n/a
Calgary East[2]	urban	Jan. 2004 to Dec. 2004	0.4	0.015	2.2	n/a	n/a	0.001	0.020	n/a	n/a	0.001	n/a	n/a	6	n/a
Calgary Northwest[2]	urban	Jan. 2004 to Dec. 2004	0.3	0.022	2.0	n/a	n/a	n/a	0.015	n/a	n/a	n/a	n/a	n/a	4	n/a
Edmonton Central[2]	urban	Jan. 2004 to Dec. 2004	0.4	0.015	2.1	n/a	n/a	n/a	0.020	n/a	n/a	n/a	n/a	n/a	5	n/a
Edmonton East[2]	urban	Jan. 2004 to Dec. 2004	0.0	0.021	2.3	n/a	n/a	0.001	0.018	n/a	n/a	bd	n/a	n/a	4	n/a
Edmonton Northwest[2]	urban	Jan. 2004 to Dec. 2004	0.3	0.018	2.0	n/a	n/a	n/a	0.014	n/a	n/a	n/a	n/a	17	4	n/a
Fort Saskatchewan[2]	small urban	Jan. 2004 to Dec. 2004	3.1	0.022	1.9	n/a	n/a	0.001	0.007	0.002	n/a	bd	n/a	n/a	3	n/a
Red Deer[2]	small urban	Jan. 2004 to Dec. 2004	0.3	0.019	1.9	n/a	n/a	bd	0.006	n/a	n/a	bd	n/a	n/a	4	n/a
Buffalo Viewpoint[3]	industrial	Jan. 2004 to Dec. 2004	n/a	n/a	1.9	n/a	n/a	bd	n/a	n/a	n/a	bd	n/a	n/a	n/a	n/a
Fort Chipewyan[3]	rural	Jan. 2004 to Dec. 2004	n/a	0.023	n/a	n/a	n/a	bd	0.038	n/a	n/a	n/a	n/a	n/a	2	n/a
Fort McKay[3]	rural	Jan. 2004 to Dec. 2004	n/a	0.023	1.8	n/a	n/a	bd	0.003	n/a	bd	n/a	n/a	n/a	2	n/a
Fort McMurray (Athabasca Valley)[3]	small urban	Jan. 2004 to Dec. 2004	0.2	0.020	3.5	n/a	n/a	bd	0.007	n/a	0.001	n/a	n/a	n/a	2	n/a
Fort McMurray (Patricia McInnes)[3]	small urban	Jan. 2004 to Dec. 2004	n/a	0.022	1.9	n/a	n/a	0.001	0.004	n/a	bd	n/a	n/a	n/a	3	n/a
Mannix[3]	industrial	Jan. 2004 to Dec. 2004	n/a	n/a	1.9	n/a	n/a	0.001	n/a	n/a	n/a	bd	n/a	n/a	n/a	n/a
Mildred Lake[3]	industrial	Jan. 2004 to Dec. 2004	n/a	n/a	1.9	n/a	n/a	bd	n/a	n/a	n/a	bd	n/a	n/a	n/a	n/a
Carrot Creek[4]	rural	Jan. 2004 to Dec. 2004	n/a	0.029	n/a	n/a	n/a	bd	0.004	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Hightower Ridge[4]	background	Jan. 2004 to Dec. 2004	n/a	0.045	n/a	n/a	n/a	bd	0.001	n/a	n/a	n/a	n/a	5	1	n/a
Tomahawk[4]	rural	Jan. 2004 to Dec. 2004	n/a	0.030	n/a	n/a	n/a	0.001	0.003	n/a	n/a	n/a	n/a	9	3	n/a
Violet Grove[4]	rural	Jan. 2004 to Dec. 2004	n/a	0.034	2.0	n/a	n/a	0.001	0.002	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Carrington[5]	rural	Jan. 2004 to Dec. 2004	n/a	0.026	2.2	n/a	n/a	bd	0.002	n/a	bd	n/a	n/a	n/a	n/a	n/a

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n/a – Parameter not monitored or data not available.
bd – Below lower detection limit of analyzer.

Table A4: Maximum one-hour air pollutant concentrations in Alberta.

Air Quality Station or Survey Name	Station or Survey Type	Monitoring Period	CO ppm	O_3 ppm	THC ppm	CH_4 ppm	RHC ppm	SO_2 ppm	NO_2 ppm	NH_3 ppm	TRS ppm	H_2S ppm	TSP $\mu g/m^3$	PM_{10} $\mu g/m^3$	$PM_{2.5}$ $\mu g/m^3$	PAHs ng/m^3
St. Albert (current survey)	mobile survey	April 2003 - Mar. 2005	1.5	0.050	5.4	5.1	0.6	0.011	0.041	0.012	0.004	0.004	265	168	21	63
Lloydminster[1]	mobile survey	Jan. 2002 to Nov. 2004	0.8	0.043	5.2	4.9	2.9	0.023	0.038	0.016	0.022	0.020	1418	946	151	27
Parkland Area[1]	mobile survey	May 2003 to Sep. 2004	0.9	0.049	7.2	4.1	4.6	0.009	0.012	0.013	0.003	0.003	1505	1074	127	14
Banff[1]	mobile survey	Nov. 19 to 22, 2003	1.5	0.034	3.6	3.1	0.8	0.002	0.033	0.013	0.001	0.003	37	23	21	105
Fort Saskatchewan[1]	mobile survey	May 2001 to Mar. 2002	2.2	0.049	3.6	3.6	0.5	0.022	0.051	0.577	0.004	0.003	547	323	24	70
Cold Lake/Bonnieville/Elk Point[1]	mobile survey	Mar. 2001 to Feb. 2002	1.4	0.047	9.7	4.6	7.1	0.017	0.014	0.005	0.056	0.054	2281	1188	72	14
Whitecourt/Swan Hills/Shiningbank Lake[1]	mobile survey	Mar. 2001 to June 2001	0.7	0.054	4.3	2.5	2.5	0.046	0.030	0.013	0.005	0.003	945	441	43	113
Waburman[1]	mobile survey	July 2000 to Sep. 2001	0.5	0.057	3.3	3.2	0.5	0.032	0.015	0.020	0.003	0.001	807	534	42	11
Edmonton (Whitemud Drive)[1]	mobile survey	June 2000 to July 2001	2.7	0.059	4.4	2.7	1.6	0.015	0.041	0.039	0.005	0.003	459	239	37	77
Bow Corridor[1]	mobile survey	Dec. 1999 to Sep. 2000	1.1	0.056	7.8	2.2	6.6	0.092	0.031	0.034	0.004	0.002	2082	1094	60	36
Permanent Continuous Monitoring Stations																
Beaverlodge[2]	rural	Jan. 2004 to Dec. 2004	n/a	0.065	n/a	n/a	n/a	0.037	0.045	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Calgary Central[2]	urban	Jan. 2004 to Dec. 2004	5.1	0.061	3.6	n/a	n/a	n/a	0.088	n/a	n/a	n/a	n/a	269	48	n/a
Calgary East[2]	urban	Jan. 2004 to Dec. 2004	4.2	0.070	4.6	n/a	n/a	0.032	0.108	n/a	n/a	0.025	n/a	n/a	97	n/a
Calgary Northwest[2]	urban	Jan. 2004 to Dec. 2004	3.8	0.073	3.4	n/a	n/a	n/a	0.076	n/a	n/a	n/a	n/a	n/a	46	n/a
Edmonton Central[2]	urban	Jan. 2004 to Dec. 2004	4.2	0.079	9.5	n/a	n/a	n/a	0.072	n/a	n/a	n/a	n/a	n/a	100	n/a
Edmonton East[2]	urban	Jan. 2004 to Dec. 2004	2.3	0.092	25.9	n/a	n/a	0.053	0.081	n/a	n/a	0.036	n/a	n/a	90	n/a
Edmonton Northwest[2]	urban	Jan. 2004 to Dec. 2004	6.6	0.073	14.5	n/a	n/a	n/a	0.082	n/a	n/a	n/a	n/a	223	103	n/a
Fort Saskatchewan[2]	small urban	Jan. 2004 to Dec. 2004	3.1	0.074	4.6	n/a	n/a	0.027	0.066	0.141	n/a	0.005	n/a	n/a	124	n/a
Red Deer[2]	small urban	Jan. 2004 to Dec. 2004	2.4	0.070	16.9	n/a	n/a	0.006	0.055	n/a	n/a	0.010	n/a	n/a	87	n/a
Buffalo Viewpoint[3]	industrial	Jan. 2004 to Dec. 2004	n/a	n/a	6.6	n/a	n/a	0.178	n/a	n/a	n/a	0.016	n/a	n/a	n/a	n/a
Fort Chipewyan[3]	rural	Jan. 2004 to Dec. 2004	n/a	0.070	n/a	n/a	n/a	0.086	0.038	n/a	n/a	n/a	n/a	n/a	75	n/a
Fort McKay[3]	rural	Jan. 2004 to Dec. 2004	n/a	0.070	n/a	n/a	n/a	0.086	0.038	n/a	0.006	n/a	n/a	n/a	75	n/a
Fort McMurray (Athabasca Valley)[3]	small urban	Jan. 2004 to Dec. 2004	1.9	0.065	3.5	n/a	n/a	0.077	0.183	n/a	0.006	n/a	n/a	n/a	189	n/a
Fort McMurray (Patricia McInnes)[3]	small urban	Jan. 2004 to Dec. 2004	n/a	0.057	6.0	n/a	n/a	0.103	0.045	n/a	0.003	n/a	n/a	n/a	86	n/a
Mannix[3]	industrial	Jan. 2004 to Dec. 2004	n/a	n/a	7.2	n/a	n/a	0.705	n/a	n/a	n/a	0.015	n/a	n/a	n/a	n/a
Mildred Lake[3]	industrial	Jan. 2004 to Dec. 2004	n/a	n/a	9.1	n/a	n/a	0.173	n/a	n/a	n/a	0.033	n/a	n/a	n/a	n/a
Carrot Creek[4]	rural	Jan. 2004 to Dec. 2004	n/a	0.080	n/a	n/a	n/a	0.054	0.047	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Hightower Ridge[4]	background	Jan. 2004 to Dec. 2004	n/a	0.077	n/a	n/a	n/a	0.012	0.025	n/a	n/a	n/a	n/a	80	73	n/a
Tomahawk[4]	rural	Jan. 2004 to Dec. 2004	n/a	0.070	n/a	n/a	n/a	0.025	0.058	n/a	n/a	n/a	n/a	171	50	n/a
Violet Grove[4]	rural	Jan. 2004 to Dec. 2004	n/a	0.068	9.0	n/a	n/a	0.030	0.046	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Caroline[6]	rural	Jan. 2004 to Dec. 2004	n/a	0.061	3.4	n/a	n/a	0.026	0.028	n/a	0.004	n/a	n/a	n/a	n/a	n/a

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bd – Below lower detection limit of analyzer

Table A5: Chronological listing of one-hour average concentrations (by site).

Site	Location	Date	Start/End Times	CO PPM	O_3 PPM	THC PPM	CH_4 PPM	RHC PPM	SO_2 PPM	NO PPM	NO_2 PPM	NOx PPM	NH_3 PPM	TRS PPM	H_2S PPM	TSP $\mu g/m^3$	PM_{10} $\mu g/m^3$	$PM_{2.5}$ $\mu g/m^3$	PAH ng/m^3
1	St Albert Centre	29-Apr-04	06.53 to 07.53	0.5	0.021	2.4	2.2	0.2	0.001	ND	ND	ND	ND	0.002	0.002	11	6	1	26
2	Lacombe Park	29-Apr-04	08.08 to 09.08	0.2	0.034	2.3	2.3	bd	bd	bd	0.002	0.002	bd	bd	bd	8	5	1	1
3	Red Willow Park	29-Apr-04	09.17 to 10.21	0.5	0.035	2.5	2.5	bd	bd	0.001	0.002	0.003	bd	bd	bd	2	1	bd	0
4	Campbell Industrial Park	29-Apr-04	10.29 to 11.30	0.3	0.036	2.3	2.3	bd	bd	0.001	0.004	0.005	bd	bd	bd	2	1	bd	1
5	Riel Business Park	29-Apr-04	11.44 to 12.49	0.3	0.039	2.3	2.3	bd	bd	bd	0.007	0.007	bd	bd	bd	4	2	bd	0
1	St Albert Centre	29-Apr-04	12.58 to 13.59	0.6	0.030	2.4	2.2	0.2	0.002	0.024	0.021	0.046	0.003	0.001	bd	14	9	1	19
2	Lacombe Park	29-Apr-04	14.09 to 15.13	0.2	0.040	2.3	2.1	0.2	0.001	0.001	0.009	0.010	0.001	0.001	bd	15	8	1	2
3	Red Willow Park	29-Apr-04	15.22 to 16.23	0.1	0.040	2.3	2.1	0.2	0.001	0.001	0.007	0.008	bd	0.001	bd	2	2	bd	0
4	Campbell Industrial Park	29-Apr-04	16.30 to 17.31	0.2	0.035	2.3	2.1	0.2	0.001	0.002	0.005	0.007	bd	bd	bd	5	3	1	2
5	Riel Business Park	29-Apr-04	17.46 to 18.47	bd	0.037	2.3	2.2	0.1	bd	0.001	0.002	0.003	bd	0.001	bd	5	3	1	0
6	Village Landing Mall	7-May-04	06.23 to 07.24	0.9	0.005	2.9	2.7	0.2	0.001	0.045	0.023	0.068	0.007	0.002	0.002	4	3	1	30
5	Riel Business Park	7-May-04	07.32 to 08.33	0.2	0.018	2.8	2.8	bd	0.001	0.005	0.011	0.016	0.004	0.001	bd	8	5	1	1
4	Campbell Industrial Park	7-May-04	08.45 to 09.48	0.1	0.012	2.8	2.8	bd	0.003	0.007	0.008	0.015	0.005	0.001	bd	8	5	1	6
3	Red Willow Park	7-May-04	09.57 to 10.58	0.1	0.032	2.9	2.9	bd	bd	0.004	0.004	0.008	0.004	bd	bd	5	3	1	1
2	Lacombe Park	7-May-04	11.06 to 12.08	0.1	0.036	2.7	2.6	0.1	bd	0.006	0.003	0.009	0.004	0.001	bd	7	4	1	1
6	Village Landing Mall	7-May-04	12.19 to 13.20	0.2	0.036	2.7	2.6	0.1	bd	0.010	0.007	0.017	0.003	0.001	bd	4	3	1	9
5	Riel Business Park	7-May-04	13.29 to 14.29	0.4	0.043	2.7	2.7	bd	bd	0.001	0.001	0.002	0.004	0.001	bd	13	6	1	0
4	Campbell Industrial Park	7-May-04	14.44 to 15.45	0.4	0.044	2.7	2.6	0.1	bd	0.003	0.004	0.007	0.001	0.003	bd	9	6	1	4
3	Red Willow Park	7-May-04	15.59 to 16.59	0.4	0.045	2.8	2.8	bd	bd	0.004	0.004	0.008	0.001	0.002	bd	9	5	1	1
2	Lacombe Park	7-May-04	17.13 to 18.15	0.3	0.045	2.6	2.5	0.1	bd	0.003	0.004	0.007	0.001	0.001	bd	8	5	1	0
6	Village Landing Mall	11-May-04	06.20 to 07.21	0.7	0.010	3.0	2.7	0.3	0.003	0.063	0.023	0.086	0.012	0.002	0.002	17	9	3	44
4	Campbell Industrial Park	11-May-04	07.31 to 08.32	bd	0.025	2.7	2.6	0.1	0.004	0.001	0.004	0.005	0.004	0.002	bd	10	6	3	1
3	Red Willow Park	11-May-04	08.38 to 09.39	0.3	0.033	2.8	2.6	0.1	0.002	0.002	0.004	0.006	0.002	0.001	bd	8	5	1	1
2	Lacombe Park	11-May-04	09.48 to 10.49	0.2	0.038	2.7	2.6	bd	0.001	bd	0.001	0.001	bd	0.001	bd	5	3	1	1
5	Riel Business Park	11-May-04	11.01 to 12.01	0.1	0.039	2.8	2.8	bd	bd	bd	bd	bd	bd	0.002	bd	7	5	1	1
6	Village Landing Mall	11-May-04	12.11 to 13.14	0.6	0.034	2.7	2.6	0.1	0.001	0.006	0.011	0.017	0.002	0.002	bd	7	4	1	8
4	Campbell Industrial Park	11-May-04	13.23 to 14.22	0.5	0.039	2.7	2.6	bd	bd	bd	0.001	0.001	bd	0.002	bd	7	4	1	2
3	Red Willow Park	11-May-04	14.31 to 15.34	0.5	0.042	2.8	2.7	bd	bd	bd	0.002	0.002	bd	bd	bd	7	4	1	0
2	Lacombe Park	11-May-04	15.50 to 16.51	0.2	0.042	2.7	2.6	0.1	bd	0.001	0.002	0.003	bd	0.002	bd	6	4	1	0
5	Riel Business Park	11-May-04	17.04 to 18.04	0.2	0.042	2.8	2.8	bd	bd	bd	0.001	0.001	bd	0.002	bd	16	10	2	1
4	Campbell Industrial Park	14-May-04	05.59 to 06.59	0.3	0.018	2.9	2.7	0.2	0.001	0.008	0.014	0.022	bd	0.003	0.003	2	1	bd	5
3	Red Willow Park	14-May-04	07.08 to 08.07	0.1	0.022	3.0	2.8	0.2	0.002	0.006	0.008	0.014	bd	0.001	0.001	11	6	1	2
2	Lacombe Park	14-May-04	08.16 to 09.16	0.2	0.030	2.8	2.7	0.1	0.002	0.003	0.005	0.008	bd	0.001	bd	8	4	1	3
1	St Albert Centre	14-May-04	09.28 to 10.27	0.4	0.028	2.9	2.8	0.1	0.001	0.021	0.014	0.035	0.006	bd	bd	8	5	1	11
5	Riel Business Park	14-May-04	10.37 to 11.37	0.2	0.041	2.8	2.8	bd	0.001	bd	bd	bd	bd	bd	bd	12	7	1	0
4	Campbell Industrial Park	14-May-04	12.05 to 13.10	0.2	0.040	2.7	2.6	bd	0.001	0.001	0.003	0.004	bd	bd	bd	8	5	1	2
3	Red Willow Park	14-May-04	13.18 to 14.19	0.2	0.041	2.8	2.8	bd	bd	bd	0.002	0.002	bd	bd	bd	4	3	bd	1
2	Lacombe Park	14-May-04	14.27 to 15.29	0.4	0.040	2.8	2.8	bd	bd	0.007	0.003	0.010	0.002	bd	bd	13	8	2	3
1	St Albert Centre	14-May-04	15.37 to 16.37	0.8	0.026	2.8	2.6	0.1	0.002	0.027	0.014	0.041	0.009	bd	bd	7	5	1	30

Continued ...

NOTES:
ND - not determined (analyzer not functioning)
bd - below detection limit of analyzer

Table A4: Maximum one-hour air pollutant concentrations in Alberta.

Air Quality Station or Survey Name	Station or Survey Type	Monitoring Period	CO ppm	O_3 ppm	THC ppm	CH_4 ppm	RHC ppm	SO_2 ppm	NO_2 ppm	NH_3 ppm	TRS ppm	H_2S ppm	TSP $\mu g/m^3$	PM_{10} $\mu g/m^3$	$PM_{2.5}$ $\mu g/m^3$	PAHs ng/m^3
St. Albert (current survey)	mobile survey	April 2003 - Mar. 2005	1.5	0.050	5.4	5.1	0.6	0.011	0.041	0.012	0.004	0.004	265	168	21	63
Lloydminster[1]	mobile survey	Jan. 2002 to Nov. 2004	0.8	0.043	5.2	4.9	2.9	0.023	0.038	0.016	0.022	0.020	1418	946	151	27
Lakeland Area[1]	mobile survey	May 2003 to Sep. 2004	0.9	0.049	7.2	4.1	4.6	0.009	0.012	0.013	0.003	0.003	1505	1074	127	14
Banff[1]	mobile survey	Nov. 19 to 22, 2003	1.5	0.034	3.6	3.1	0.8	0.002	0.033	0.013	0.001	0.003	37	23	21	105
Fort Saskatchewan/Redwater1	mobile survey	May 2001 to Mar. 2002	2.2	0.049	3.6	3.6	0.5	0.022	0.051	0.577	0.004	0.003	547	323	24	70
Cold Lake/Bonnieville/Elk Point[1]	mobile survey	Mar. 2001 to Feb. 2002	1.4	0.047	9.7	4.6	7.1	0.017	0.014	0.005	0.056	0.054	2281	1188	72	14
Whitecourt/Swan Hills/Shiningbank Lake[1]	mobile survey	Mar. 2001 to June 2001	0.7	0.054	4.3	2.5	2.5	0.046	0.030	0.013	0.005	0.003	946	441	43	113
Waburman[1]	mobile survey	July 2000 to Sep. 2001	0.5	0.057	3.3	3.2	0.5	0.032	0.015	0.020	0.003	0.001	807	534	42	11
Edmonton (Whitemud Drive)[1]	mobile survey	June 2000 to July 2001	2.7	0.059	4.4	2.7	1.6	0.015	0.041	0.039	0.005	0.003	459	239	37	77
Bow Corridor[1]	mobile survey	Dec. 1999 to Sep. 2000	1.1	0.056	7.8	2.2	6.6	0.092	0.031	0.034	0.004	0.002	2082	1094	60	36
Permanent Continuous Monitoring Stations																
Beaverlodge[2]	rural	Jan. 2004 to Dec. 2004	n/a	0.065	n/a	n/a	n/a	0.037	0.045	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Calgary Central[2]	urban	Jan. 2004 to Dec. 2004	5.1	0.061	3.6	n/a	n/a	n/a	0.088	n/a	n/a	n/a	n/a	269	48	n/a
Calgary East[2]	urban	Jan. 2004 to Dec. 2004	4.2	0.070	4.6	n/a	n/a	0.032	0.108	n/a	n/a	0.025	n/a	n/a	97	n/a
Calgary Northwest[2]	urban	Jan. 2004 to Dec. 2004	3.8	0.073	3.4	n/a	n/a	n/a	0.076	n/a	n/a	n/a	n/a	n/a	46	n/a
Edmonton Central[2]	urban	Jan. 2004 to Dec. 2004	4.2	0.079	9.5	n/a	n/a	n/a	0.072	n/a	n/a	n/a	n/a	n/a	100	n/a
Edmonton East[2]	urban	Jan. 2004 to Dec. 2004	2.3	0.092	25.9	n/a	n/a	0.053	0.081	n/a	n/a	0.036	n/a	n/a	90	n/a
Edmonton Northwest[2]	urban	Jan. 2004 to Dec. 2004	6.6	0.073	14.5	n/a	n/a	n/a	0.082	n/a	n/a	n/a	n/a	223	103	n/a
Fort Saskatchewan[2]	small urban	Jan. 2004 to Dec. 2004	3.1	0.074	4.6	n/a	n/a	0.027	0.066	0.141	n/a	0.005	n/a	n/a	124	n/a
Red Deer[2]	small urban	Jan. 2004 to Dec. 2004	2.4	0.070	16.9	n/a	n/a	0.006	0.055	n/a	n/a	0.010	n/a	n/a	87	n/a
Buffalo Viewpoint[3]	industrial	Jan. 2004 to Dec. 2004	n/a	n/a	6.6	n/a	n/a	0.178	n/a	n/a	n/a	0.016	n/a	n/a	n/a	n/a
Fort Chipewyan[3]	rural	Jan. 2004 to Dec. 2004	n/a	0.070	n/a	n/a	n/a	0.086	0.038	n/a	n/a	n/a	n/a	n/a	75	n/a
Fort McKay[3]	rural	Jan. 2004 to Dec. 2004	n/a	0.070	n/a	n/a	n/a	0.086	0.038	n/a	0.008	n/a	n/a	n/a	75	n/a
Fort McMurray (Athabasca Valley)[3]	small urban	Jan. 2004 to Dec. 2004	1.9	0.065	3.5	n/a	n/a	0.077	0.183	n/a	0.006	n/a	n/a	n/a	189	n/a
Fort McMurray (Patricia McInnes)[3]	small urban	Jan. 2004 to Dec. 2004	n/a	0.057	6.0	n/a	n/a	0.103	0.045	n/a	0.003	n/a	n/a	n/a	86	n/a
Mannix[3]	industrial	Jan. 2004 to Dec. 2004	n/a	n/a	7.2	n/a	n/a	0.705	n/a	n/a	n/a	0.015	n/a	n/a	n/a	n/a
Mildred Lake[3]	industrial	Jan. 2004 to Dec. 2004	n/a	n/a	9.1	n/a	n/a	0.173	n/a	n/a	n/a	0.033	n/a	n/a	n/a	n/a
Carrot Creek[4]	rural	Jan. 2004 to Dec. 2004	n/a	0.080	n/a	n/a	n/a	0.054	0.047	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Hightower Ridge[4]	background	Jan. 2004 to Dec. 2004	n/a	0.077	n/a	n/a	n/a	0.012	0.025	n/a	n/a	n/a	n/a	80	73	n/a
Tomahawk[4]	rural	Jan. 2004 to Dec. 2004	n/a	0.070	n/a	n/a	n/a	0.025	0.058	n/a	n/a	n/a	n/a	171	50	n/a
Violet Grove[4]	rural	Jan. 2004 to Dec. 2004	n/a	0.068	9.0	n/a	n/a	0.030	0.046	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Caroline[6]	rural	Jan. 2004 to Dec. 2004	n/a	0.061	3.4	n/a	n/a	0.026	0.028	n/a	0.004	n/a	n/a	n/a	n/a	n/a

NOTES:

1 - Mobile survey conducted by Alberta Environment.
2 - Station operated by Alberta Environment.
3 - Station operated by the Wood Buffalo Environmental Association.
4 - Station operated by the West Central Airshed Society.
5 - Station operated by the Strathcona Industrial Association.
6 - Station operated by the Parkland Airshed Management Association.

n/a - Parameter not monitored or data not available.
bd - Below lower detection limit of analyzer

Table A5: Chronological listing of one-hour average concentrations (by site).

Site	Location	Date	Start/End Times	CO PPM	O_3 PPM	THC PPM	CH_4 PPM	RHC PPM	SO_2 PPM	NO PPM	NO_2 PPM	NOx PPM	NH_3 PPM	TRS PPM	H_2S PPM	TSP µgr/m³	PM_{10} µgr/m³	$PM_{2.5}$ µgr/m³	PAH ngr/m³
1	St Albert Centre	29 Apr 04	06 53 to 07 53	0.5	0.021	2.4	2.2	0.2	0.001	ND	ND	ND	ND	0.002	0.002	11	6	1	26
2	Lacombe Park	29 Apr 04	08 08 to 09 08	0.2	0.034	2.3	2.3	bd	bd	bd	0.002	0.002	bd	bd	bd	8	5	1	1
3	Red Willow Park	29 Apr 04	09 17 to 10 21	0.5	0.035	2.5	2.5	bd	bd	0.001	0.002	0.003	bd	bd	bd	2	1	bd	0
4	Campbell Industrial Park	29 Apr 04	10 29 to 11 30	0.3	0.036	2.3	2.3	bd	bd	0.001	0.004	0.005	bd	bd	bd	2	1	bd	1
5	Riel Business Park	29 Apr 04	11 44 to 12 49	0.3	0.039	2.3	2.3	bd	bd	bd	0.007	0.007	bd	bd	bd	4	2	bd	0
1	St Albert Centre	29 Apr 04	12 58 to 13 59	0.6	0.030	2.4	2.2	0.2	0.002	0.024	0.021	0.046	0.003	0.001	bd	14	9	1	19
2	Lacombe Park	29 Apr 04	14 09 to 15 13	0.2	0.040	2.3	2.1	0.2	0.001	0.001	0.009	0.010	0.001	0.001	bd	15	8	1	2
3	Red Willow Park	29 Apr 04	15 22 to 16 23	0.1	0.040	2.3	2.1	0.2	0.001	0.001	0.007	0.008	bd	0.001	bd	2	2	bd	0
4	Campbell Industrial Park	29 Apr 04	16 30 to 17 31	0.2	0.035	2.3	2.1	0.2	0.001	0.002	0.005	0.007	bd	bd	bd	5	3	1	2
5	Riel Business Park	29 Apr 04	17 46 to 18 47	bd	0.037	2.3	2.2	0.1	bd	0.001	0.002	0.003	bd	0.001	bd	5	3	1	0
6	Village Landing Mall	7 May 04	06 23 to 07 24	0.9	0.005	2.9	2.7	0.2	0.001	0.045	0.023	0.068	0.007	0.002	0.002	4	3	1	30
5	Riel Business Park	7 May 04	07 32 to 08 33	0.2	0.018	2.8	2.8	bd	0.001	0.005	0.011	0.016	0.004	0.001	bd	8	5	1	1
4	Campbell Industrial Park	7 May 04	08 45 to 09 48	0.1	0.012	2.8	2.8	bd	0.003	0.007	0.008	0.015	0.005	0.001	bd	8	5	1	6
3	Red Willow Park	7 May 04	09 57 to 10 58	0.1	0.032	2.9	2.9	bd	bd	0.004	0.004	0.008	0.004	bd	bd	5	3	1	1
2	Lacombe Park	7 May 04	11 06 to 12 08	0.1	0.036	2.7	2.6	0.1	bd	0.006	0.003	0.009	0.004	0.001	bd	7	4	1	1
6	Village Landing Mall	7 May 04	12 19 to 13 20	0.2	0.036	2.7	2.6	0.1	bd	0.010	0.007	0.017	0.003	0.001	bd	4	3	1	9
5	Riel Business Park	7 May 04	13 29 to 14 29	0.4	0.043	2.7	2.7	bd	bd	0.001	0.001	0.002	0.004	0.001	bd	13	6	1	0
4	Campbell Industrial Park	7 May 04	14 44 to 15 45	0.4	0.044	2.7	2.6	0.1	bd	0.003	0.004	0.007	0.001	0.003	bd	9	6	1	4
3	Red Willow Park	7 May 04	15 59 to 16 59	0.4	0.045	2.8	2.8	bd	bd	0.004	0.004	0.008	0.001	0.002	bd	9	5	1	1
2	Lacombe Park	7 May 04	17 13 to 18 15	0.3	0.045	2.6	2.5	0.1	bd	0.003	0.004	0.007	0.001	0.001	bd	8	5	1	0
6	Village Landing Mall	11 May 04	06 20 to 07 21	0.7	0.010	3.0	2.7	0.3	0.003	0.063	0.023	0.086	0.012	0.002	0.002	17	9	3	44
4	Campbell Industrial Park	11 May 04	07 31 to 08 32	bd	0.025	2.7	2.6	0.1	0.004	0.001	0.004	0.005	0.004	0.002	bd	10	6	3	1
3	Red Willow Park	11 May 04	08 38 to 09 39	0.3	0.033	2.8	2.6	0.1	0.002	0.002	0.004	0.006	0.002	0.001	bd	8	5	1	1
2	Lacombe Park	11 May 04	09 48 to 10 49	0.2	0.038	2.7	2.6	bd	0.001	bd	0.001	0.001	bd	0.001	bd	5	3	1	1
5	Riel Business Park	11 May 04	11 01 to 12 01	0.1	0.039	2.8	2.8	bd	bd	bd	bd	bd	bd	0.002	bd	7	5	1	1
6	Village Landing Mall	11 May 04	12 11 to 13 14	0.6	0.034	2.7	2.6	0.1	0.001	0.006	0.011	0.017	0.002	0.002	bd	7	4	1	8
4	Campbell Industrial Park	11 May 04	13 23 to 14 22	0.5	0.039	2.7	2.6	bd	bd	bd	0.001	0.001	bd	0.002	bd	7	4	1	2
3	Red Willow Park	11 May 04	14 31 to 15 34	0.5	0.042	2.8	2.7	bd	bd	bd	0.002	0.002	bd	bd	bd	7	4	1	0
2	Lacombe Park	11 May 04	15 50 to 16 51	0.2	0.042	2.7	2.6	0.1	bd	0.001	0.002	0.003	bd	0.002	bd	6	4	1	0
5	Riel Business Park	11 May 04	17 04 to 18 04	0.2	0.042	2.8	2.8	bd	bd	bd	0.001	0.001	bd	0.002	bd	16	10	2	1
4	Campbell Industrial Park	14 May 04	05 59 to 06 59	0.3	0.018	2.9	2.7	0.2	0.001	0.008	0.014	0.022	bd	0.003	0.003	2	1	bd	5
3	Red Willow Park	14 May 04	07 08 to 08 07	0.1	0.022	3.0	2.8	0.2	0.002	0.006	0.008	0.014	bd	0.001	0.001	11	6	1	2
2	Lacombe Park	14 May 04	08 16 to 09 16	0.2	0.030	2.8	2.7	0.1	0.002	0.003	0.005	0.008	bd	0.001	bd	8	4	1	3
1	St Albert Centre	14 May 04	09 28 to 10 27	0.4	0.028	2.9	2.8	0.1	0.001	0.021	0.014	0.035	0.006	bd	bd	8	5	1	11
5	Riel Business Park	14 May 04	10 37 to 11 37	0.2	0.041	2.8	2.8	bd	0.001	bd	bd	bd	bd	bd	bd	12	7	1	0
4	Campbell Industrial Park	14 May 04	12 05 to 13 10	0.2	0.040	2.7	2.6	bd	0.001	0.001	0.003	0.004	bd	bd	bd	8	5	1	2
3	Red Willow Park	14 May 04	13 18 to 14 19	0.2	0.041	2.8	2.8	bd	bd	bd	0.002	0.002	bd	bd	bd	4	3	bd	1
2	Lacombe Park	14 May 04	14 27 to 15 29	0.4	0.040	2.8	2.8	bd	bd	0.007	0.003	0.010	0.002	bd	bd	13	8	2	3
1	St Albert Centre	14 May 04	15 37 to 16 37	0.8	0.026	2.8	2.6	0.1	0.002	0.027	0.014	0.041	0.009	bd	bd	7	5	1	30

Continued ...

NOTES:
ND – not determined (analyzer not functioning)
bd – below detection limit of analyzer

Table A5: ... continued from previous page

Site	Location	Date	Start/End Times	CO PPM	O_3 PPM	THC PPM	CH_4 PPM	NHC PPM	SO_2 PPM	NO PPM	NO_2 PPM	NOx PPM	NH_3 PPM	TRS PPM	H_2S PPM	TSP µg/m³	PM_{10} µg/m³	$PM_{2.5}$ µg/m³	PAH ng/m³
5	Riel Business Park	14-May-04	16:45 to 17:46	0.4	bd	2.5	2.5	bd	0.001	0.001	0.001	0.002	bd	bd	bd	5	3	1	0
5	Riel Business Park	10-Jun-04	07:17 to 08:17	0.6	0.004	2.9	2.7	0.2	0.001	0.043	0.028	0.071	0.002	0.001	0.001	92	58	8	63
6	Village Landing Mall	10-Jun-04	08:24 to 09:25	0.3	0.010	2.8	2.7	0.1	bd	0.005	0.013	0.018	bd	bd	bd	42	30	4	8
4	Campbell Industrial Park	10-Jun-04	09:34 to 10:34	0.4	0.010	3.0	2.9	0.1	0.001	0.012	0.012	0.024	bd	bd	bd	87	59	7	8
3	Red Willow Park	10-Jun-04	10:43 to 11:47	0.6	0.009	2.8	2.8	bd	0.001	0.009	0.016	0.025	bd	bd	bd	56	39	6	10
2	Lacombe Park	10-Jun-04	12:00 to 12:59	0.5	0.009	2.9	2.9	bd	0.001	0.008	0.016	0.024	bd	bd	bd	27	21	5	11
5	Riel Business Park	10-Jun-04	13:08 to 14:08	1.0	na	2.8	2.7	0.1	0.001	0.018	0.019	0.037	0.002	bd	bd	17	13	4	16
6	Village Landing Mall	10-Jun-04	14:16 to 15:22	0.2	0.017	2.7	2.7	bd	0.002	0.002	0.011	0.013	bd	bd	bd	14	10	3	4
4	Campbell Industrial Park	10-Jun-04	15:30 to 16:30	0.3	0.022	2.9	2.9	bd	bd	0.003	0.005	0.008	bd	bd	bd	18	11	2	2
3	Red Willow Park	10-Jun-04	16:45 to 17:46	0.3	0.024	2.7	2.6	0.1	bd	0.003	0.008	0.011	bd	bd	bd	8	5	2	3
6	Village Landing Mall	18-Jun-04	05:53 to 06:54	3.5	0.013	4.4	4.8	1.0	0.005	0.048	0.039	0.059	0.004	0.002	0.004	404	260	27	46
4	Campbell Industrial Park	18-Jun-04	07:03 to 08:03	1.3	0.018	3.2	3.3	0.5	0.002	0.035	0.033	0.048	0.004	0.001	0.001	218	122	13	17
3	Red Willow Park	18-Jun-04	08:10 to 09:10	4.0	0.040	3.2	3.4	0.7	0.013	0.051	0.037	0.036	0.019	bd	0.001	229	157	24	66
2	Lacombe Park	18-Jun-04	09:18 to 10:19	2.6	0.042	3.1	3.1	0.7	0.007	0.022	0.045	0.022	0.011	bd	0.001	108	65	7	33
5	Riel Business Park	18-Jun-04	10:31 to 11:32	2.7	0.043	3.1	3.4	0.5	0.009	0.014	0.022	0.025	0.070	bd	0.001	376	258	29	32
1	St Albert Centre	18-Jun-04	11:41 to 12:42	1.9	0.048	3.1	3.1	0.9	0.002	0.037	0.030	0.019	0.012	bd	0.001	53	31	8	31
4	Campbell Industrial Park	18-Jun-04	12:52 to 13:52	3.4	0.051	3.0	2.8	0.8	0.002	0.010	0.013	0.014	0.013	bd	0.001	61	36	6	3
3	Red Willow Park	18-Jun-04	14:00 to 14:59	1.6	0.052	3.1	2.9	0.5	0.001	0.008	0.014	0.012	0.003	bd	0.001	170	111	10	3
2	Lacombe Park	18-Jun-04	15:14 to 16:14	1.3	0.052	2.9	2.7	0.4	0.001	0.011	0.066	0.014	0.003	bd	0.001	48	28	3	9
5	Riel Business Park	18-Jun-04	16:27 to 17:27	3.2	0.053	3.1	3.3	0.5	0.004	0.016	0.024	0.013	0.008	bd	0.001	1656	1073	101	2
5	Riel Business Park	23-Jun-04	06:26 to 07:26	0.3	0.009	3.0	2.8	0.2	0.001	0.005	0.016	0.021	bd	0.002	0.002	65	40	5	8
6	Village Landing Mall	23-Jun-04	07:36 to 08:39	0.8	0.003	3.2	3.0	0.2	0.005	0.040	0.026	0.066	0.001	0.002	0.001	113	74	9	30
2	Lacombe Park	23-Jun-04	08:51 to 09:57	0.7	0.012	3.1	3.0	0.1	bd	0.011	0.017	0.028	0.002	0.003	bd	88	59	7	8
3	Red Willow Park	23-Jun-04	10:06 to 11:06	0.1	0.019	2.9	2.9	bd	bd	0.007	0.013	0.020	0.003	0.001	bd	160	107	12	8
4	Campbell Industrial Park	23-Jun-04	11:14 to 12:14	0.2	0.024	2.8	2.7	0.1	bd	0.004	0.006	0.010	0.001	0.001	bd	30	23	4	3
5	Riel Business Park	23-Jun-04	12:27 to 13:27	0.3	0.024	2.8	2.7	bd	bd	0.003	0.005	0.008	bd	0.001	bd	47	32	5	1
1	St Albert Centre	23-Jun-04	13:36 to 14:36	0.6	0.020	2.9	2.7	0.1	0.001	0.019	0.016	0.035	0.003	0.002	bd	67	46	7	25
2	Lacombe Park	23-Jun-04	14:43 to 15:43	0.3	0.032	2.6	2.5	0.1	bd	0.002	0.004	0.006	bd	0.002	bd	47	33	5	1
3	Red Willow Park	23-Jun-04	15:51 to 16:51	0.5	0.033	2.7	2.6	0.1	bd	0.001	0.005	0.006	0.001	0.001	bd	60	41	6	2
4	Campbell Industrial Park	23-Jun-04	17:00 to 18:00	0.8	0.036	2.7	2.7	bd	bd	0.001	0.004	0.005	bd	0.001	bd	30	22	4	1
5	Riel Business Park	23-Jun-04	18:13 to 19:13	0.4	0.031	2.8	2.8	bd	0.001	0.001	0.004	0.005	bd	bd	bd	133	90	10	1
1	St Albert Centre	20-Jul-04	06:13 to 07:14	0.4	0.007	2.6	2.2	0.4	0.001	0.024	0.012	0.036	0.007	0.002	0.001	32	23	5	42
2	Lacombe Park	20-Jul-04	07:21 to 08:21	bd	0.014	2.3	2.1	0.2	bd	0.004	0.003	0.007	0.007	0.001	bd	17	13	2	1
3	Red Willow Park	20-Jul-04	08:35 to 09:35	bd	0.021	2.7	2.6	bd	0.001	0.002	0.002	0.004	0.004	bd	bd	16	11	2	1
4	Campbell Industrial Park	20-Jul-04	09:44 to 10:44	bd	0.022	2.6	2.5	0.1	bd	0.004	0.003	0.007	0.004	bd	bd	14	9	1	4
5	Riel Business Park	20-Jul-04	10:59 to 11:59	bd	0.026	2.7	2.6	0.1	bd	bd	0.001	0.001	0.003	0.001	bd	15	10	1	0
1	St Albert Centre	20-Jul-04	12:09 to 13:09	0.2	0.020	2.7	2.4	0.3	0.001	0.031	0.009	0.040	0.008	0.001	bd	17	11	2	39
2	Lacombe Park	20-Jul-04	13:18 to 14:17	bd	0.026	2.6	2.3	0.2	bd	0.001	0.001	0.002	0.002	0.002	bd	15	10	1	1
3	Red Willow Park	20-Jul-04	14:28 to 15:28	0.1	0.026	2.7	2.4	0.3	bd	0.004	0.003	0.007	0.001	0.002	bd	14	9	1	3

Continued ...

NOTES:
ND – not determined (analyzer not functioning)
bd – below detection limit of analyzer

Table A5: ... continued from previous page

Site	Location	Date	Start/End Times	CO ppm	O_3 ppm	THC ppm	CH_4 ppm	RHC ppm	SO_2 ppm	NO ppm	NO_2 ppm	NOx ppm	NH_3 ppm	TRS ppm	H_2S ppm	TSP µg/m³	PM_{10} µg/m³	$PM_{2.5}$ µg/m³	PAH ng/m³
4	Campbell Industrial Park	20-Jul-04	15:36 to 16:39	0.1	0.023	2.6	2.4	0.2	bd	0.003	0.004	0.007	bd	bd	bd	13	9	1	6
5	Riel Business Park	20-Jul-04	16:53 to 17:54	0.1	0.023	2.6	2.5	0.1	bd	bd	0.001	0.001	bd	0.001	bd	23	16	2	1
1	St Albert Centre	27-Sep-04	06:00 to 06:59	bd	0.003	2.8	2.2	0.6	0.002	0.059	0.026	0.086	0.007	0.002	0.002	67	43	7	36
2	Lacombe Park	27-Sep-04	07:13 to 08:14	bd	0.011	2.5	2.0	0.5	0.001	0.009	0.017	0.026	0.005	bd	bd	69	47	7	15
3	Red Willow Park	27-Sep-04	08:22 to 09:22	bd	0.017	2.4	2.0	0.4	0.001	0.012	0.015	0.027	0.005	0.002	bd	109	71	8	13
4	Campbell Industrial Park	27-Sep-04	09:30 to 10:32	bd	0.029	2.1	2.0	0.1	0.001	0.003	0.006	0.009	0.004	0.002	bd	55	39	6	6
5	Riel Business Park	27-Sep-04	10:45 to 11:45	bd	0.035	2.2	2.1	0.1	bd	0.002	0.005	0.007	0.005	0.001	bd	57	39	5	2
1	St Albert Centre	27-Sep-04	11:57 to 12:58	0.1	0.032	2.4	2.1	0.3	0.001	0.016	0.014	0.030	0.006	0.001	bd	78	51	7	19
2	Lacombe Park	27-Sep-04	13:08 to 14:07	bd	0.040	2.3	1.9	0.4	0.001	0.004	0.005	0.009	0.007	bd	bd	78	51	7	1
3	Red Willow Park	27-Sep-04	14:17 to 15:15	bd	0.039	2.5	2.0	0.5	0.001	0.003	0.006	0.009	0.005	bd	bd	67	46	6	4
4	Campbell Industrial Park	27-Sep-04	16:05 to 17:06	bd	0.041	2.3	2.0	0.3	0.001	0.003	0.006	0.009	0.004	bd	bd	43	29	4	3
5	Riel Business Park	27-Sep-04	17:25 to 18:24	0.2	0.029	2.6	2.4	0.2	0.001	0.004	0.010	0.014	0.004	bd	bd	248	151	12	6
6	Village Landing Mall	4-Oct-04	07:12 to 08:14	0.8	0.002	2.8	2.4	0.4	0.001	0.041	0.014	0.055	0.004	0.001	bd	56	39	10	25
5	Riel Business Park	4-Oct-04	08:21 to 09:21	0.4	0.007	2.3	2.3	bd	0.001	0.014	0.007	0.021	0.005	bd	bd	30	21	4	4
4	Campbell Industrial Park	4-Oct-04	09:34 to 10:34	0.7	0.013	2.2	2.1	0.1	0.003	0.017	0.009	0.026	0.004	bd	bd	27	19	3	7
3	Red Willow Park	4-Oct-04	10:42 to 11:43	0.2	0.015	2.3	2.0	0.3	0.004	0.012	0.009	0.021	0.002	bd	bd	39	25	4	5
2	Lacombe Park	4-Oct-04	11:57 to 12:57	0.1	0.019	2.2	1.9	0.3	0.007	0.009	0.009	0.018	0.001	bd	bd	54	34	4	2
1	St Albert Centre	4-Oct-04	13:04 to 14:18	0.4	0.017	2.2	1.8	0.4	0.008	0.037	0.019	0.056	0.011	0.001	bd	60	36	5	40
5	Riel Business Park	4-Oct-04	14:27 to 15:29	0.1	0.026	2.2	1.9	0.3	0.004	0.003	0.006	0.009	0.001	bd	bd	48	30	4	1
4	Campbell Industrial Park	4-Oct-04	15:43 to 16:44	bd	0.020	2.2	1.8	0.4	0.003	0.006	0.015	0.021	0.002	bd	bd	48	29	4	8
3	Red Willow Park	4-Oct-04	16:52 to 17:54	0.8	0.003	2.5	1.9	0.6	0.005	0.060	0.030	0.090	0.002	bd	bd	220	143	17	33
2	Lacombe Park	4-Oct-04	18:04 to 19:06	0.7	0.006	2.5	2.0	0.5	0.004	0.037	0.030	0.067	0.006	bd	bd	197	129	16	12
1	St Albert Centre	3-Nov-04	07:12 to 08:12	0.5	0.007	2.3	2.1	0.1	0.002	0.057	0.027	0.084	0.008	0.001	0.001	111	74	11	31
4	Campbell Industrial Park	3-Nov-04	08:23 to 09:24	0.2	0.014	2.0	1.9	0.1	0.002	0.010	0.019	0.029	0.003	bd	bd	37	24	3	5
3	Red Willow Park	3-Nov-04	09:33 to 10:37	0.1	0.019	2.1	2.0	0.1	0.002	0.008	0.014	0.022	0.001	bd	bd	31	21	3	5
2	Lacombe Park	3-Nov-04	10:45 to 11:44	0.1	0.025	2.1	2.0	0.1	0.007	0.007	0.010	0.017	0.001	0.001	bd	28	19	2	10
5	Riel Business Park	3-Nov-04	11:56 to 12:56	bd	0.028	2.1	2.0	0.1	0.003	0.005	0.008	0.013	0.001	bd	bd	54	34	4	2
1	St Albert Centre	3-Nov-04	13:08 to 14:07	0.5	0.018	2.2	2.0	0.1	0.002	0.040	0.022	0.062	0.008	0.001	bd	128	78	9	35
4	Campbell Industrial Park	3-Nov-04	14:20 to 15:19	0.2	0.026	2.1	2.0	0.1	0.002	0.007	0.011	0.018	0.003	bd	bd	49	31	4	9
3	Red Willow Park	3-Nov-04	15:25 to 16:26	0.5	0.011	2.3	2.1	0.1	0.002	0.027	0.026	0.053	0.004	bd	bd	95	63	8	16
2	Lacombe Park	3-Nov-04	16:46 to 17:47	0.2	0.012	2.4	2.3	0.1	0.002	0.004	0.026	0.030	0.002	bd	bd	51	35	5	8
5	Riel Business Park	3-Nov-04	17:58 to 18:58	0.3	0.004	2.4	2.3	bd	0.002	0.004	0.031	0.035	0.001	bd	bd	58	38	5	13
4	Campbell Industrial Park	10-Nov-04	07:20 to 08:21	0.7	bd	2.5	2.3	0.1	0.001	0.070	0.028	0.098	0.001	0.004	0.004	67	48	7	20
1	St Albert Centre	10-Nov-04	08:33 to 09:32	0.8	bd	2.7	2.5	0.2	0.001	0.095	0.032	0.128	0.005	0.003	0.002	187	109	12	47
2	Lacombe Park	10-Nov-04	09:39 to 10:40	0.2	0.006	2.5	2.4	0.1	0.002	0.028	0.024	0.052	0.001	0.001	0.001	63	37	4	9
3	Red Willow Park	10-Nov-04	10:50 to 11:50	0.2	0.015	2.4	2.3	0.1	bd	0.016	0.017	0.033	bd	bd	bd	51	33	4	9
5	Riel Business Park	10-Nov-04	12:02 to 13:02	0.1	0.025	2.3	2.2	0.1	bd	0.005	0.007	0.012	0.001	bd	bd	44	24	2	5
4	Campbell Industrial Park	10-Nov-04	13:16 to 14:15	0.1	0.028	2.2	2.2	bd	bd	0.001	0.005	0.006	bd	0.001	bd	10	8	1	2
1	St Albert Centre	10-Nov-04	14:27 to 15:27	0.4	0.015	2.4	2.4	bd	bd	0.026	0.024	0.050	0.003	bd	bd	71	48	7	16

Continued ...

NOTES:
ND – not determined (analyzer not functioning)
bd – below detection limit of analyzer

Table A5: ... continued from previous page

Site	Location	Date	Start/End Times	CO	O_3	THC	CH_4	NHC	SO_2	MO	NO_2	NOx	NH_3	TRS	H_2S	TSP	PM_{10}	$PM_{2.5}$	PAH
				PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	ug/m^3	ug/m^3	ug/m^3	ug/m^3
2	Lacombe Park	10-Nov-04	15:43 to 16:44	0.2	0.011	2.4	2.4	bd	bd	0.004	0.021	0.025	bd	bd	bd	53	33	4	8
3	Red Willow Park	10-Nov-04	16:52 to 17:54	0.4	0.002	2.4	2.4	bd	bd	0.018	0.029	0.047	0.001	bd	bd	70	43	5	15
5	Riel Business Park	10-Nov-04	18:04 to 19:05	0.3	0.001	2.4	2.4	bd	bd	0.011	0.027	0.038	0.001	0.001	bd	62	38	5	12
5	Riel Business Park	16-Feb-05	07:17 to 08:15	1.5	0.001	5.4	5.1	0.3	0.001	0.055	0.037	0.092	0.001	0.003	0.003	ND	ND	ND	16
1	St Albert Centre	16-Feb-05	08:27 to 09:30	1.3	0.003	3.3	3.0	0.3	0.002	0.103	0.041	0.144	0.006	0.002	0.002	ND	ND	ND	28
2	Lacombe Park	16-Feb-05	09:45 to 10:44	0.6	0.017	2.6	2.5	bd	0.002	0.016	0.021	0.037	0.001	0.001	bd	ND	ND	ND	4
3	Red Willow Park	16-Feb-05	10:53 to 11:53	0.5	0.024	2.6	2.6	bd	0.002	0.013	0.016	0.029	bd	0.002	bd	ND	ND	ND	4
4	Campbell Industrial Park	16-Feb-05	11:59 to 13:00	0.4	0.031	2.5	2.4	bd	0.003	0.008	0.010	0.018	0.001	0.001	bd	ND	ND	ND	3
5	Riel Business Park	16-Feb-05	13:14 to 14:14	0.3	0.036	2.6	2.6	bd	0.002	0.004	0.006	0.010	bd	0.001	bd	ND	ND	ND	1
1	St Albert Centre	16-Feb-05	14:24 to 15:24	0.7	0.020	2.6	2.5	0.1	0.004	0.049	0.025	0.074	0.008	0.001	bd	ND	ND	ND	20
2	Lacombe Park	16-Feb-05	15:39 to 16:40	0.3	0.033	2.5	2.4	bd	0.003	0.004	0.010	0.014	0.002	0.001	bd	ND	ND	ND	3
3	Red Willow Park	16-Feb-05	16:54 to 17:56	0.2	0.029	2.5	2.5	bd	0.002	bd	0.014	0.014	bd	0.001	bd	ND	ND	ND	3
4	Campbell Industrial Park	16-Feb-05	18:02 to 19:04	0.5	0.015	2.8	2.4	0.4	0.002	0.008	0.028	0.036	0.002	0.001	bd	ND	ND	ND	9
4	Campbell Industrial Park	18-Feb-05	07:18 to 08:18	1.2	0.002	3.1	3.0	0.1	0.002	0.054	0.041	0.095	0.001	0.002	0.001	ND	ND	ND	24
6	Village Landing Mall	18-Feb-05	08:27 to 09:27	1.0	0.006	2.7	2.7	bd	0.002	0.069	0.041	0.110	0.002	0.002	bd	ND	ND	ND	40
2	Lacombe Park	18-Feb-05	09:41 to 10:51	0.6	0.020	2.6	2.6	bd	0.002	0.017	0.022	0.039	0.002	0.001	bd	ND	ND	ND	8
3	Red Willow Park	18-Feb-05	11:08 to 12:08	0.8	0.028	2.7	2.7	bd	0.003	0.013	0.013	0.026	0.002	0.001	bd	ND	ND	ND	3
5	Riel Business Park	18-Feb-05	12:27 to 13:29	0.4	0.025	2.6	2.5	0.1	0.004	0.018	0.020	0.038	0.003	0.003	bd	ND	ND	ND	7
4	Campbell Industrial Park	18-Feb-05	13:42 to 14:41	0.2	0.032	2.4	2.4	bd	0.006	0.008	0.010	0.018	0.001	0.003	bd	ND	ND	ND	2
6	Village Landing Mall	18-Feb-05	14:48 to 15:49	0.7	0.019	2.4	2.4	bd	0.011	0.043	0.028	0.071	0.003	0.003	bd	ND	ND	ND	26
2	Lacombe Park	18-Feb-05	16:02 to 17:02	0.4	0.030	2.4	2.4	bd	0.002	0.005	0.012	0.017	0.001	0.002	bd	ND	ND	ND	3
3	Red Willow Park	18-Feb-05	17:14 to 18:12	0.5	0.032	2.5	2.5	bd	0.002	0.004	0.010	0.014	0.001	0.002	bd	ND	ND	ND	2
5	Riel Business Park	18-Feb-05	18:20 to 19:20	0.7	0.024	2.6	2.5	0.1	0.003	0.004	0.018	0.022	0.001	0.001	bd	ND	ND	ND	3
2	Lacombe Park	3-Mar-05	06:52 to 07:51	0.7	0.014	2.8	2.8	bd	0.002	0.008	0.024	0.032	0.001	0.001	0.001	7	5	1	8
1	St Albert Centre	3-Mar-05	07:59 to 08:58	0.8	0.009	3.0	3.0	bd	0.003	0.044	0.031	0.075	0.009	0.001	0.001	78	48	5	26
3	Red Willow Park	3-Mar-05	09:04 to 10:04	0.5	0.018	3.0	3.0	bd	0.002	0.014	0.022	0.036	0.004	0.001	bd	31	21	3	6
4	Campbell Industrial Park	3-Mar-05	10:13 to 11:14	0.3	0.026	2.8	2.8	bd	0.001	0.012	0.014	0.026	0.003	bd	bd	27	19	3	5
5	Riel Business Park	3-Mar-05	11:27 to 12:28	0.2	0.029	2.9	2.9	bd	0.002	0.011	0.012	0.023	0.004	0.002	bd	37	24	3	2
2	Lacombe Park	3-Mar-05	12:49 to 13:54	0.2	0.034	2.7	2.7	bd	0.001	0.006	0.009	0.015	0.004	0.001	bd	19	12	2	5
1	St Albert Centre	3-Mar-05	14:05 to 15:02	0.5	0.026	2.8	2.7	0.1	0.002	0.031	0.019	0.051	0.010	0.001	bd	214	134	16	21
3	Red Willow Park	3-Mar-05	15:09 to 16:09	0.2	0.029	2.8	2.8	bd	0.002	0.008	0.016	0.024	0.003	bd	bd	55	33	4	4
4	Campbell Industrial Park	3-Mar-05	16:19 to 17:18	0.2	0.024	2.8	2.8	bd	0.001	0.008	0.023	0.031	0.002	0.001	bd	60	41	6	9
5	Riel Business Park	3-Mar-05	17:36 to 18:37	1.0	0.008	3.3	3.0	0.3	0.003	0.036	0.036	0.072	0.004	0.001	0.001	158	113	13	18
5	Riel Business Park	4-Mar-05	07:07 to 08:07	0.6	0.008	4.1	3.9	0.2	bd	0.009	0.024	0.033	0.001	0.002	0.001	19	15	3	5
1	St Albert Centre	4-Mar-05	08:17 to 09:16	0.8	0.009	3.1	3.1	bd	0.002	0.052	0.025	0.077	0.006	bd	bd	57	39	6	36
2	Lacombe Park	4-Mar-05	09:23 to 10:23	0.5	0.023	2.9	2.9	bd	0.001	0.011	0.013	0.024	0.003	bd	bd	24	17	3	4
3	Red Willow Park	4-Mar-05	10:31 to 11:32	0.4	0.029	2.9	2.8	bd	0.001	0.010	0.011	0.021	0.003	0.001	bd	39	26	4	5
4	Campbell Industrial Park	4-Mar-05	11:40 to 12:41	0.4	0.029	2.7	2.6	bd	0.001	0.015	0.014	0.029	0.005	0.001	bd	69	45	6	7
5	Riel Business Park	4-Mar-05	12:53 to 13:54	0.3	0.034	2.7	2.5	0.2	0.002	0.009	0.013	0.022	0.007	0.001	bd	72	41	5	3

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NOTES:
ND – not determined (analyzer not functioning)
bd – below detection limit of analyzer

Table A5: ... continued from previous page

Site	Location	Date	Start/End Times	CO PPM	O_3 PPM	THC PPM	CH_4 PPM	NHC PPM	SO_2 PPM	NO PPM	NO_2 PPM	NOx PPM	NH_3 PPM	TRS PPM	H_2S PPM	TSP µg/m³	PM_{10} µg/m³	$PM_{2.5}$ µg/m³	PAH ng/m³
1	St Albert Centre	4-Mar-05	14.05 to 15.06	0.7	0.022	2.8	2.5	0.3	0.005	0.043	0.026	0.069	0.009	0.001	0.001	260	165	21	20
2	Lacombe Park	4-Mar-05	15.15 to 16.14	0.2	0.033	2.5	2.3	0.2	0.005	0.008	0.015	0.023	0.004	0.001	bd	40	26	4	5
3	Red Willow Park	4-Mar-05	16.24 to 17.24	0.3	0.024	2.6	2.4	0.2	0.004	0.009	0.024	0.033	0.005	0.001	bd	109	70	8	7
4	Campbell Industrial Park	4-Mar-05	17.34 to 18.31	0.5	0.012	2.7	2.5	0.1	0.005	0.011	0.035	0.046	0.003	bd	bd	93	64	8	11

Continued ...

NOTES:
ND – not determined (analyzer not functioning)
bd – below detection limit of analyzer